CHNOLOGY DEPT.

540.6 C4p
1924-25

PROCEEDINGS

OF THE

CHEMICAL SOCIETY.

Ordinary Scientific Meeting, Thursday, January 17th, 1924, at 8 p.m., Professor W. P. WYNNE, D.Sc., F.R.S., President, in the Chair.

The PRESIDENT referred to the loss sustained by the Society, through death, of the following Fellows:

	Elected.	Died.
George Henry Beckett	April 2nd, 1874.	Nov. 2nd, 1923.
Frederick John Bloomer	Feb. 19th, 1891.	Dec. 21st, 1923.
Douglas Herman	Feb. 16th, 1871.	Jan. 1st, 1924.
Austin Keen	Dec. 7th, 1882.	Jan. 20th, 1922.
Herbert James Ling	June 15th, 1911.	
Dudley Cloete Vining	June 19th, 1919.	Jan. 8th, 1924.

The PRESIDENT announced:

(1) That the names of the Members of Council who retire at the Annual General Meeting on the 27th March, 1924, and who are ineligible for re-election to the same office until the lapse of one year, are as follows:

Secretary:
Professor J. C. Philip.

Vice-Presidents who have filled the office of President:
Dr. Alexander Scott, Sir William A. Tilden.

Vice-Presidents who have not filled the office of President:
Professor F. Gowland Hopkins, Professor T. M. Lowry.

Ordinary Members of Council:
(*a*) Town Members:
Professor J. S. S. Brame, Mr. E. V. Evans, Dr. T. Slater Price.
(*b*) Country Members:
Professor S. H. Desch, Mr. H. B. Hartley, Dr. N. V. Sidgwick.

(2) That the following vacant places accordingly fall due to be filled at the Annual General Meeting on March 27th, 1924:

Secretary	One vacancy.
Vice-Presidents who have filled the office of President	Two vacancies.
Vice-Presidents who have not filled the office of President	Two vacancies.

Ordinary Members of Council:

(*a*) Town Members (*i.e.*, those living within a radius of 50 miles from London) ...	Three vacancies.
(*b*) Country Members (*i.e.*, those living beyond a radius of 50 miles from London)...	Three vacancies.

(3) That the Council had nominated Professor C. S. Gibson to the office of Secretary.

The following were formally admitted Fellows of the Chemical Society: D. Arkell, R. H. Atkinson, and D. Powell.

Certificates were read for the first time in favour of:

William Richardson Anderson, B.Sc., 3, Derwentwater Terrace, South Shields.
Charles Edward Baldwin, B.A., A.I.C., Dunloe, Temple Ewell, Dover.
Richard Byron Duerden, B.Sc., A.I.C., 6, Langholme Road, Nelson.
Frederick Basil Garner, B.Sc., A.I.C., 10, Richmond Road, Wimbledon, S.W. 20.
Hugh Harper, B.Sc., c/o Anglo-Persian Oil Co., Ltd., Abadan, Persian Gulf.
Frank Hindle, Sewage Works, Common Bank, Chorley.
Ralph Percival Hobson, B.Sc., Rothamsted Experimental Station, Harpenden.
Harry Raymond Ing, B.A., 184, Divinity Road, Oxford.
Frederick Charles Lay, B.A., University Settlement, Nile Street, Liverpool.
Fred Mattingley, B.Sc., A.I.C., 3, Frankfurt Road, Herne Hill, S.E. 24.
Edward Tom Neathercoat, C.B.E., J.P., The Elms, Weybridge, Surrey.
Thomas Richard Owles, 9, Bassett Road, W. 10.
Edward Samson, 1, Branksome Wood Road, Bournemouth.
Reginald Bernard Warne, 98, Argyle Road, West Ealing, W. 13.
George Crone Westgarth, B.Sc., Wolsingham, Co. Durham.
William Arthur Whiting, 9, Kensington Avenue, Watford.

The following Certificate has been authorised by the Council for presentation to ballot under Bye-Law I (2):

John Laurence Miles, 35, Merjam Street, Lexington, Mass., U.S.A.

WARNING.

The following papers were read:

"A suggested explanation of the allotropic transformations of iron." By R. H. Atkinson.

"...vity of water in aqueous hydrochloric acid." By E. DOBSON and I. MASSON.

"...pour pressure of hydrochloric acid." By J. S. DUNN and E. K. RIDEAL.

"The freezing of inorganic hydrogels." By J. R. I. HEPBURN.

HUGO MÜLLER LECTURE.

The Hugo Müller Lecture will be delivered by Professor J. Joly, M.A., F.R.S., on Thursday, February 28th, 1924, at 8 p.m., in the Lecture Hall of the Institution of Mechanical Engineers, Storey's Gate, Westminster, S.W. 1.

List of Papers received between December 21st, 1923, and January 17th, 1924. (This List does not include the titles of papers which have been read at a Scientific Meeting, or which have appeared in the Journal.)

"Reduction products of the hydroxy-anthraquinones. Part V." By F. L. GOODALL and A. G. PERKIN.

"The action of diacetyl tartaric anhydride and chlorofumaryl chloride upon aromatic amines and hydrazines." By F. D. CHATTAWAY and G. D. PARKES.

"Studies in fluorescence spectra. Part II. Some phenols and phenolic ether vapours." By J. K. MARSH.

"Stereoisomeric semicarbazones." By F. J. WILSON and R. M. MACAULAY.

"The absorption spectra of some derivatives of phenol and other substances." By J. E. PURVIS.

"Studies in the anthracene series. Part VIII." By E. DE B. BARNETT and M. A. MATTHEWS.

"Volume alterations on solution." By F. L. TEED.

"The activity of hydrogen-ion in aqueous solutions of hydrofluoric acid." By W. F. K. W. JONES and L. J. HUDLESTON.

"A simple method for determining the approximate index of refraction of liquids with a common microscope." By C. C. KIPLINGER.

"The polysulphides of carbethoxide thioncarbethoxide and dithiocarbethoxide." By D. TWISS.

"Depolymerisation of diglycerine." By E. LEWIS.

"The periodic dissolution of metals in certain reagents." By E. S. HEDGES and J. E. MYERS.

"The correction of the specific gravity of liquids for the buoyancy of air." By G. BARR.

"Note on the action of potassium hydroxide on nitric oxide." By G. BARR.

"Note on the preparation of 3 : 3'-dinitrobenzophenone." By E. DE B. BARNETT and M. A. MATTHEWS.

"Studies in the anthracene series. Part IX." By E. DE B. BARNETT and J. W. COOK.

"Note on the interpretation of surface energy data." By G. M. BENNETT.

"Constitutional studies in the monocarboxylic acids derived from sugars. Part II. The methylation of tetramethyl gluconic acid." By J. PRYDE.

"Electrical conductivities of mixtures of aniline, acetic acid and water." By J. R. POUND.

"The oxidation of 2-thiol-4 : 5-diphenylglyoxaline." By I. D. LAMB and F. L. PYMAN.

"The hydroferrocyanides and hydroferricyanides of the organic bases. Part III." By W. M. CUMMING.

"The solubility of the aminophenols." By N. V. SIDGWICK and R. K. CALLOW.

"Abnormal benzene derivatives." By N. V. SIDGWICK and R. K. CALLOW.

"The rotatory dispersive power of organic compounds. Part XI. Octyl alcohol and octyl oxalate." By T. M. LOWRY and E. M. RICHARDS.

CERTIFICATES OF CANDIDATES FOR ELECTION AT THE BALLOT TO BE HELD AT THE ORDINARY SCIENTIFIC MEETING ON THURSDAY, FEBRUARY 21ST, 1924.

N.B.—The names of those who sign from "General Knowledge" are printed in *italics*.

ANDERSON, WILLIAM RICHARDSON, B.Sc., 3, Derwentwater Terrace, South Shields. British. Student Demonstrator in Chemistry. B.Sc. (2nd Class Hons. Chemistry), Dunelm (1922); 2 years training in laboratories of Messrs. Palmer's Shipbuilding and Iron Co., Jarrow (Analytical Chemistry) (1916–1918). Since 1922, Research under Prof. W. N. Haworth. (*Signed by*) W. N. Haworth, G. C. Leitch, J. A. Smythe.

ATKINSON, REGINALD GRAHAM, 35, Heathdene Rd., Streatham, S.W. 16. British. Research Student (Organic Chemistry). Associate of the Royal College of Science (A.R.C.S.). Three year course at the Royal College of Science. (*Signed by*) C. K. Ingold, M. A. Whiteley, G. A. R. Kon, Arnold Stevenson.

BALDWIN, CHARLES EDWARD, "Dunloe," Temple Ewell, near Dover. British. Senior Science Master at Gainsborough Grammar School. B.A.

Oxon. (Hons. Chemistry). Associate of Institute of Chemistry. Trained and registered teacher, etc. Teacher of and lecturer in Chemistry. (*Signed by*) F. D. Chattaway, Herbert B. Hammond, G. Devenish Thomas.

BISHOP, WILFRID BARNARD S., B.Sc., "Tamar," Miller Street, Petersham, N.S.W. Australia. Demonstrator, Department of Chemistry, The University of Sydney, N.S.W. Author of (i) "The Preparation of Ethyl Formate by the Interaction of Oxalic Acid, Glycerol, and Ethyl Alcohol Vapour," read before Soc. Chem. Industry, N.S.W. Section, May 1923. (ii) "Ethyl Ether —Quantitative Results by Williamson's Synthesis, with note on Purification." For reading, Chem. Soc. Industry, N.S.W. Section, October 15, inst. (*Signed by*) Charles E. Fawsitt, J. A. Schofield, J. C. Earl, G. J. Burrows, Henry G. Smith, George Harker.

BROWNE, THOMAS ETHELRED WILBY, 26, York St., Norwich, Norfolk. British. Science Master (Chemistry and Agriculture), Lucton School, Kingsland, Herefordshire. Bachelor of Science of University of Wales in Chemistry and Agriculture, July 1922. (*Signed by*) Kennedy Orton, G. W. Robinson, F. G. Soper.

BUTLER, FRANCIS HERBERT CULVERHOUSE, South End, St. Cross, Winchester, Hants. British. Lecturer on Chemistry, Winchester Training College. B.A. (Hons.) Cambridge; Part II, Natural Sciences Tripos. Associate of the Institute of Chemistry. Demonstrator in Chemistry under Dr. H. J. H. Fenton, M.A., Sc.D., F.R.S., F.I.C., F.C.S., in the University Chemical Laboratory, Cambridge, 1921–1922. At present engaged in lecturing on Chemistry and carrying out research in Physical Chemistry. (*Signed by*) H. J. H. Fenton, Eric K. Rideal, W. G. Palmer.

CHANNON, HAROLD JOHN, 28, Glenhouse Road, Eltham, London, S.E. 9. British. Research Assistant, Department of Biochemistry, University College, London, W.C. 1. *Degrees:* B.A., London, 1919. B.Sc. (Chem. Hons.), London, 1922. Engaged on research in biochemistry since 1922 with Professor J. C. Drummond, University College, London. Demonstrator, Biochemistry, University College, London, 1922–3. Research Assistant, Biochemistry, University College, London, 1923–. (*Signed by*) F. G. Donnan, W. E. Garner, J. C. Drummond.

CLENDINNEN, FREDERICK WILLIAM JEFFREY, Carlton Brewery, Melbourne, Australia. Chemist, Carlton and United Breweries. First Class Final Honours Chemistry M.Sc. (Melb.). Published Papers: (1) "The Ternary System Ammonium Chloride–Manganous Chloride–Water" (Clendinnen and Rivett, T., 1921, **119**, 1329). (2) "Mixed Crystal Formation in Ternary Systems Containing Water, Ammonium Chloride, and Ferrous, Cobaltous, or Nickel Chloride" (Clendinnen, T., 1922, **121**, 801). (3) "The Ternary System Ammonium Chloride–Ferric Chloride–Water" (T., 1923, **123**, 1338). (4) "A Critical Solution Temperature for Solids in the Binary System Ammonium Chloride–Manganous Chloride Dihydrate" (Clendinnen and Rivett, T., 1923, **123**, 1344). (5) "Mixed Crystals and Double Salts, etc." (Rivett and Clendinnen, T., 1923, **123**, 1634). (*Signed by*) Orme Masson, A. C. D. Rivett, E. J. Hartung.

CLUER, ALAN ROWLAND, 36, Dunmore Road, Wimbledon, S.W. 20. British. Research Student. A.R.C.S. (2nd Class). B.Sc. (Hons. 2nd Class). (*Signed by*) M. A. Whiteley, G. A. R. Kon, Arnold Stevenson, C. K. Ingold.

CROSLEY, GEORGE DUNCAN, 134, Cranbrook Rd., Ilford, Essex. British. Schoolmaster (responsible for the organisation of science teaching in the school). Higher School certif., London University Matric. School certif. (Northern Universities). I take a very great interest in Chemistry and I

intend to complete my B.Sc. with Honours in Chemistry in the near future and to teach Chemistry only. (*Signed by*) E. D. Griffiths, Geoffrey Middleton, G. P. Trasler.

CROWLE, REGINALD STANLEY, 38, Devonshire Rd., Millom, Cumberland. Chief Analyst to the Millom and Askam Hematite Iron Co. Ltd. Chief analyst (as above) (after being 10 years chief assistant). Past student at the Imperial Institute of Science and Technology, London. Holder of Stage 1, 2, and 3 certificates in both Theoretical and Practical Chemistry under the Board of Education, South Kensington, London. Teacher of both Theoretical and Practical Chemistry at evening classes, under local education authorities. (*Signed by*) T. Greetham, Alex. W. McLaren, Alfred R. Campbell, R. T. Thomson.

CUMMING, WILLIAM MURDOCH, 31, Mossgiel Road, Newlands, Glasgow. British. Lecturer on Organic Chemistry, The Royal Technical College, Glasgow. B.Sc., F.I.C. Papers in *J. Soc. Chem. Industry* (two), 1921, **41**, 20; 1922, **42**, 166. Papers in *J. Chemical Society* (three), 1922, **121**, 1287; 1923, **123**, 2457; 1923, **123**, 2465. "Systematic Organic Chemistry," Cumming, Hopper, and Wheeler (Constable & Co.). (*Signed by*) Thomas Gray, F. J. Wilson, T. S. Patterson, R. M. Caven, G. G. Henderson.

CURSEDJI, TALATI DADABHAI, L.M.S., B.Hy. (Bombay), D.T.M. (Liverpool), D.P.H. (Cantab.), M.R.San.I. (England). Baroda, India. Parsee. Sanitary Commissioner, Baroda State, and Municipal Commissioner, Baroda City, being the officer in charge of the Municipal Chemical and Bacteriological laboratories, also as the Sanitary Commissioner he has to inspect chemical works, dyeing factories, tanning factories, etc., hence he wants to be in touch with the chemical literature published by the Chemical Society. (*Signed by*) B. P. B. Naidu, S. R. Khosla, N. A. Yajnik.

DALL, JOHN, 42, Bruntsfield Place, Edinburgh. British. Pharmaceutical Chemist. I desire to join the Chemical Society in order that I may receive the publications, attend the meetings, and have the use of the Library. (*Signed by*) A. Archibald Boon, A. Scott Dodd, George Barger.

DENHAM, HENRY GEORGE, Christchurch, New Zealand. Professor of Chemistry, Canterbury College, New Zealand. Educated at Canterbury College, N.Z.; M.A., M.Sc. (N.Z.), D.Sc. (Liv.), Ph.D. (Heid.); Fellow, Australian Chemical Institute. 1912–1920, Lecturer in Chemistry, University of Queensland. 1921–1922, Professor of Inorganic Chemistry, University of Cape Town. Author of numerous papers in Inorganic and Physical Chemistry, published in *J.C.S.*; *Zeit. phys. Chemie*; *Zeit. anorg. Chem.*; *Amer. Chem. Soc. Journ.* Author of text-book of Inorganic Chemistry. *Signed by*) A. M. Wright, A. J. Allmand, F. G. Donnan.

DICKES, WINIFRED ESTHER, "Eversley," Carlyle Road, Croydon. Research Student. B.Sc. Honours in Chemistry. One year's research done at Battersea Polytechnic. (*Signed by*) Joseph Kenyon, Robert H. Pickard, Harold Hunter.

DUERDEN, RICHARD BYRON, 6, Langholme Rd., Nelson, Lancs. British. Senior Chemistry Master, Nelson Secondary and Technical Schools. B.Sc. (Lond.), A.I.C. (*Signed by*) G. W. F. Holroyd, Robert H. Pickard, J. Kenyon, Harold Hunter.

DUTT, SIKHIBHUSHAN, 21, Cromwell Road, South Kensington, S.W. 7. Indian, Hindu. Research Student in Organic Chemistry in the Imperial College of Science and Technology, South Kensington, under Prof. Thorpe. Published 10 original papers in Organic Chemistry on synthetic dyestuffs, either singly or jointly, during the years 1921, 1922, and 1923, in the Journal

of the Chemical Society. Some more are in course of publication. (*Signed by*) Jocelyn Thorpe, M. A. Whiteley, G. A. R. Kon.

EGGLETON, PHILIP, 45, King's Road, Kingston, Surrey. English. Biochemist. Studied for Hons. Chem. degree at University College, London, 1919–1922. Took 2nd Class Hons. Now Demonstrator of Biochemistry to medical students at University College. (*Signed by*) W. E. Garner, Irvine Masson, J. N. E. Day.

EWELL, ERNEST WILLIAM, 37, Townwall Street, Dover. British. Dispensing and Analytical Chemist and Radiographer. A former pupil of W. H. Pendlebury (Dover College) and Norman Collie (Pharm. Society School, Bloomsbury Sq.) has been for over 25 years actively engaged in chemical examination of pathological specimens, and analyses of drugs and chemicals. This application is to ensure authentic data of new methods, with particular reference to clinical and biochemical tests, chemistry of colloids, and the modern atomic theory, as well as to attend meetings of the Society. (*Signed by*) E. W. Lucas, H. B. Stevens, G. Devenish Thomas, Ernest M. Hawkins, Herbert B. Hammond.

FARROW, MAURICE DUNCAN, 89, Windsor Road, Ilford, Essex. British. Research Student at the Royal College of Science. Associate of Royal College of Science. Bachelor of Science, Hons. Lond. (*Signed by*) C. K. Ingold, G. A. R. Kon, M. A. Whiteley.

FEATHERSTONE, CHARLES RICHMOND, Clifton Rise, York. English. Schoolmaster. 2nd Class Honours in Chemistry at Oxford, 1908. Fifteen years' experience in teaching Chemistry. Senior Science Master at St. Peter's School, York, since 1915. (*Signed by*) N. V. Sidgwick, A. F. Walden, D. Ll. Hammick, M. P. Applebey, B. Lambert.

GARNER, FREDERICK BASIL, 10, Richmond Rd., Wimbledon, S.W. 20. British. Teacher. B.Sc. (London), 1st Class Honours in Chemistry. A.R.C.S. (London) (1st Class in Chemistry). A.I.C. Assistant in Chemical Dept., Wimbledon Tech. Inst., 1912–1915. Head of Chemical Dept., Wimbledon Tech. Inst. 1919 up to present time. (*Signed by*) Arthur A. Eldridge, M. A. Whiteley, James C. Philip.

HARMAN, ROY WILLIAM, "Netherend," Woodcroft Avenue, Mill Hill, N.W. 7. British. Ph.D. Research student, University College, London. M.Sc. New Zealand, 1922. 1851 Exhibition Science Scholarship, N.Z., 1923. (*Signed by*) F. G. Donnan, W. E. Garner, Allan E. Mitchell.

HARPER, HUGH, c/o Anglo-Persian Oil Co., Ltd., Abadan, Persian Gulf. Scottish. Analytical Chemist. B.Sc. degree of Edinburgh University. Three years' course at Edinburgh University and Heriot Watt College. At present process chemist with Messrs. The Anglo-Persian Oil Co., Ltd., Abadan, Persian Gulf. (*Signed by*) Jas. Walker, G. L. Kennaby, C. E. Spearing.

HINDLE, FRANK, Sewage Work, Common Bank, Chorley, Lancs. English. Manager and Chemist, Sewage Works, Chorley. 4 Years under Mr. G. Guest, M.Sc., B.A., as private pupil, Haslingden. 3 Years under G. Boothmar. 1914 to 1920 Manager and Chemist, Ashton in Makerfield Sewage Works. 1920 to 1924 Man. and Chemist, Chorley Borough Sewage Works. (*Signed by*) Jas. H. Edmonson, W. E. Speight, W. H. Duckworth.

HOBSON, RALPH PERCIVAL, Rothamsted Experimental Station, Harpenden. British. Research Scholar in Agricultural Chemistry. B.Sc. Agriculture (London). 3½ Years at South-Eastern Agricultural College, Wye, Kent. B.Sc., 1st Class Honours in Chemistry. 2 Years at University College, London. (*Signed by*) H. J. Page, Irvine Masson, W. E. Garner.

HOLMES, ERIC LEIGHTON, 58, St. George's Sq., S.W. 1. English. Student, Research in Organic Chemistry. Associate of the Royal College of Science. (*Signed by*) M. A. Whiteley, G. A. R. Kon, C. K. Ingold.

ING, HARRY RAYMOND, 184, Divinity Road, Oxford. British. University Demonstrator, Oxford. 1st Class Honour School of Chemistry, Oxford. Senior Scholar, New College, Oxford, 1922–23. (*Signed by*) W. H. Perkin, E. Hope, S. G. P. Plant.

KESTNER, PAUL, 38, Rue Ribera, Paris-Auteuil, France. French. President Société de Chimie Industrielle. (*Signed by*) Henry E. Armstrong, W. P. Wynne, William J. Pope, E. F. Armstrong, E. V. Evans, G. G. Henderson.

LAY, FREDERICK CHARLES, University Settlement, Nile St., Liverpool. British. Schoolmaster. 2nd Class Final Hons., School of Chemistry, Oxford. Chemistry Master, Liverpool College. (*Signed by*) D. L. Chapman, S. G. P. Plant, G. R. Clemo, Fredk. A. Mason.

LEA, FREDERICK MEASHAM, 31, Greenway, Uxbridge, Middlesex. British. Research Chemist, Admiralty. M.Sc. (Birmingham) 1922. A.I.C. (*Signed by*) G. T. Morgan, C. E. Wood, A. E. Goddard, S. R. Carter, Frederick Challenger.

LEIGH, HARRY GRAHAM, 46, Brent View Rd., West Hendon, N.W. 9. British. Research Chemist to the British Launderers' Research Association. B.Sc. (Lond.). To keep in touch with recent advances in chemistry and to use the Library. (*Signed by*) R. G. Parker, J. T. Holden, Harold Hunter.

LEVY, EVA REBECCA, 21, St. James' Mansions, West Hampstead, N.W. 6. British. Student. Student in Chemistry Honours at Bedford College. (*Signed by*) H. Crompton, J. F. Spencer, M. S. Crewdson.

LOCKET, GEORGE HAZLEWOOD, Salmon's Cross, Reigate. English. Student. B.A. Oxon. (*Signed by*) N. V. Sidgwick, D. Ll. Hammick, S. G. P. Plant.

M'OWAN, GEORGE, Chattan House, St. Andrews. Scots. Research Assistant, University, St. Andrews. B.Sc., Ph.D., Ph.D. Thesis on Trimethyl Inulin. 1 Year engaged by D. S. I. R. At present lecturer assistant in St. Andrews. (*Signed by*) John Read, A. Killen Macbeth, J. C. Irvine.

MADGIN, WALTER MATTHEW, 3, Matfen Place, Fenham, Newcastle-on-Tyne. British. Lecturer in Chemistry at Armstrong College (Durham University). M.Sc. (Dunelm). A.I.C. (*Signed by*) P. Phillips Bedson, J. A. Smythe, W. N. Haworth, H. V. A. Briscoe.

MATTINGLEY, FRED, 3, Frankfurt Road, Herne Hill, S.E. 24. British. Analyst with Gutta Percha Co., Wharf Road, City Road, N. 1. General analytical work. 2½ Years' experience of Food and Drugs Analysis and general consulting practice as assistant to Mr. A. S. Carlos, 325, Kennington Rd., S.E. 11. B.Sc. (2nd Class Hons. Chem.) 1923, London University (Birkbeck College). A.I.C. Elected Dec. 1923. (*Signed by*) Claude S. Grace, John N. Dean, Arthur S. Carlos.

MENDELSOHN, OSCAR ADOLF, 85, Collins St., Melbourne, Victoria, Australia. British (born Nanango, Queensland). Public Analyst and Consulting Chemist. Full course in Chemistry, Sydney Technical College. B.Sc. Univ. of Melbourne (Hons. Chem. and Physiology). Consulting chemist to Magnesium Products Pty., Ltd., Hart Dyes, Ltd., Chelonia Ltd., Gippsland Co-op. Co., Ltd., etc. Director of Mag. Prod. Ltd. Associate Australian Chemical Institute (A.A.C.I.). Adviser on educational works to Postmaster General's Dept. (*Signed by*) N. T. M. Wilsmore, W. J. Young, Henry W. Levy.

MORE, ANDREW, Ellesmere, King's Road, Walton-on-Thames. British. Superintending Chemist. Government Laboratory, Clements Inn Passage, Strand, London, W.C. 2. Associate of the Royal Technical College, Glasgow. Associate of the Royal College of Science, London. Fellow of the Institute of Chemistry. (*Signed by*) Geo. Stubbs, J. J. Fox, Robert Robertson.

NEATHERCOAT, EDWARD TOM, C.B.E., J.P. The Elms, Weybridge, Surrey. British. President of the Pharmaceutical Society. (*Signed by*) W. P. Wynne, Arthur W. Crossley, Francis H. Carr.

OWLES, THOMAS RICHARD, 9, Bassett Road, London, W. 10. English. Pharmaceutical and Analytical Chemist. Member of Pharmaceutical Society, Great Britain. 1897, passed advanced stage Theoretical and Practical Chemistry (Science and Art Dept.). 1899, passed Cambridge Exam. honours in Theoretical and Pract. Chemistry. 1902, Assistant Chemist Messrs. Storham, Maidstone. 1903, Assistant, Messrs. Wollings, Sandown, I.O.W. 1904–5, studied Chemistry under Professor Alcock, Birmingham. 1906–7, Assistant to Mr. Rogers, Chemist, London. 1907–11, Managing Assistant to Mr. Poole, Birmingham. 1911–16, Manager, Lanham & Co., Chemists, London, W. 1916–20, Military Service. 1920–24, Manager, Hamilton & Co., Chemists, Piccadilly, W. (*Signed by*) Frank Radcliffe, Samuel Gray Fenton, Ralph Scott.

PARK, JAMES RITCHIE, 164, Lessingham Ave., Tooting, S.W. 17. British. Demonstrator in Chemistry. B.Sc. (London). 1st Class Honours in Chemistry. Paper (in conjunction with Prof. J. R. Partington) on "Reaction between Copper and Nitrogen Peroxide" submitted to Chemical Society, Oct. 1923. (*Signed by*) Eustace E. Turner, Percy C. Austin, J. R. Partington.

PRATT, DAVID DOIG, 57, Barlow Moor Rd., Didsbury, Manchester. British. Research Chemist at University, Manchester. (*Signed by*) Robert Robinson, Arthur Lapworth, Edmund L. Hirst.

RAE, JOHN, The Hollies, Thingwall Rd., Wavertree, Liverpool. British. Pharmacist. "Opium," by A. C. Abraham, F.I.C., assisted by H. E. Digby and J. Rae, paper read at Pharm. Soc. evening meeting in London, 25/4/22. "Further Notes on Opium," by A. C. Abraham, F.I.C., and J. Rae, Pharm. J., 5/8/22. "Loss of Morphine in Powdered Opium by Keeping," by A. C. Abraham, F.I.C., and J. Rae, Pharm. J., 14/7/23. (*Signed by*) A. C. Abraham, I. M. Heilbron, E. C. C. Baly.

ROBERT, ROGER LAURENT FELIX, 43, Pine Rd., Didsbury, Manchester. Research Chemist. Candidate for M.Sc.Tech. Part-time demonstrator in Organic Chemistry in the College of Technology, Manchester. (*Signed by*) Frank Lee Pyman, Fredk. M. Rowe, John K. Wood.

RUBIN, MAX, c/o P.O. Box 1140, Johannesburg, S.A. South African. M.P.S. Desirous of keeping in touch with chemical progress and of availing myself to possible facilities for further study. (*Signed by*) P. H. Woodnoth, Alfred Thomas, H. Sampson Wills.

RUSSELL, ALEXANDER SMITH, 4, Moreton Road, Oxford. British. D.Sc. (Glasgow). Student and Tutor of Christ Church, Oxford, and Dr. Lee's Reader in Chemistry. About thirty research papers in *Phil. Mag.*, *Phiyskal. Zeit.*, *Proc. Roy. Soc.*, *Journ. Chem. Soc.*, etc., on Radioactivity, and Physical Chemistry. *Books:* Author of "An Introduction to the Chemistry of Radioactive Substances." Part-author of "The Rare Earth Industry." (*Signed by*) W. H. Perkin, N. V. Sidgwick, T. W. J. Taylor, D. Ll. Hammick, S. G. P. Plant, E. Hope.

SAMSON, EDWARD, 1, Branksome Wood Rd., Bournemouth. British. Dental Surgeon (L.D.S., R.C.S., England). Studied Chemistry for three

years at the Asche's School under Wm. Ash, B.A. Subsequently a year's study in Chemistry under E. Jobling, M.A. A year's course of Organic and Inorganic Chemistry under Ellis Richards, F.I.C. A further course of Theoretical and Practical Metallurgy under Ellis Richards, F.I.C. A study of Bio-chemistry at Middlesex Hospital. A course of Materia Medica under F. Coleman, L.R.C.P., L.D.S. Assistant Demonstrator at Royal Dental Hospital in Histology and Microscopy. Now Book Prizeman in Histology. Assistantship was served with C. Bowdler Henry, L.R.C.P., M.R.C.S., L.D.S. (*Signed by*) J. E. Jewell, Frank Radcliffe, Samuel Gray Fenton.

SCHOFIELD, HAROLD, St. John's College, York. English. At present a student at the University of Leeds; intend to become a teacher of chemistry. Taking the B.Sc. examination in Honours Chemistry at the end of the present session. (*Signed by*) H. M. Dawson, J. B. Cohen, W. Lowson.

SCHOLES, ALFRED, Alma House, Junction Rd., Norton, Stockton-on-Tees. British. Analytical Chemist. Fellow of the Institute of Chemistry. Four years as pupil and 19 years as Chief Assistant Chemist with Messrs. Pattinson & Stead, Middlesbro'. Now partner in the firm of Pattinson & Stead. (*Signed by*) Cecil H. Desch, J. T. Dunn, J. G. Taylor.

SHER, HARRY NATHAN, 8, Cleve Rd., Hampstead. British. Research Student, Royal College of Science. A.R.C.S. B.Sc. (Hons. 2nd Class). (*Signed by*) Jocelyn Thorpe, M. A. Whiteley, G. A. R. Kon, Arnold Stevenson.

SHIKATA, MASUZO, c/o Mrs. Bloman, Prague IV-261, Bašta sv. Jiři, Czecho-Slovakia. Japanese. Lecturer in Applied Chemistry in the Imperial University of Kyoto (Japan). Doctor of Agricultural Chemistry. Former research student in the Chemical and Physical Institute in Tokyo. Papers published: "Oxidation of Benzene" (*J. of Engineering Chemistry*, Japan, 1921). "Diffusion of Dyestuff" (*Kolloid Z.*, 1923, v). (*Signed by*) F. G. Donnan, Henry Terrey, J. Heyrovsky, L. F. Gilbert.

SHOPPEE, CHARLES WILLIAM, 38, Womersley Rd., Crouch End, N. 8. British. Research Student (Organic Chemistry). A.R.C.S., B.Sc. (*Signed by*) H. B. Baker, C. K. Ingold, G. A. R. Kon, M. A. Whiteley.

SILVESTER, WILLIAM ARTHUR, 10, Moxley Rd., Crumpsall, Manchester. British. Chemist. M.Sc. (1st Class Honours in Chemistry, Sheffield). Town Trust Fellow and 1851 Exhibition Research Scholar (Cambridge, 1915–16). Successively chemist with the Asiatic Petroleum Co., Ltd., H.M. Factory, Sandycroft, and the Anglo-Egyptian Oilfields, Ltd., Refinery, Suez, Egypt, and at present in the Research Department of the British Dyestuffs Corporation, Ltd. Published a note on the petrol from Borneo petroleum, *J. Soc. Chem. Ind.*, 1920, **39**, 187T. (*Signed by*) W. P. Wynne, J. Kenner, Arthur G. Green.

SMITH, FRANK HAROLD, Hazelbank, Beech Rd., Reigate. British. Librarian to the Gutta Percha Co., London. M.A., Cambridge. First Class Honours Natural Science Tripos, Part I and Part II. Third Class Honours Mathematical Tripos, Part I (New Regulations). Formerly Scholar of Pembroke College, Cambridge, and Research Scholar of the King Edward VII British-German Foundation. 1919–1922, Research Chemist with Messrs. Brotherton & Co., Ltd., Port Rainbow. (*Signed by*) Claude S. Grace, William Doran, R. W. Merriman, Harold Rogerson.

SMITH, LAURENCE FREDERICK, 62, Robertson Road, Brighton. British. Research Student at Royal College of Science, South Kensington. Associate of Royal College of Science (Chemistry). B.Sc., 2nd Class Honours in Chemistry. (*Signed by*) H. B. Baker, G. A. R. Kon, M. A. Whiteley.

SMITH, MARGARET LLEWELLYN, 5, The Grove, Highgate, N. 6. British.

Student. Student in Honours Chemistry at Bedford College. (*Signed by*) H. Crompton, J. F. Spencer, M. S. Crewdson.

STEAD, FREDERICK ARNOLD, 11, Queen's Terrace, Middlesbrough. British. Analytical Chemist. 1909–10–11–12 Matriculated Student, Durham University (Armstrong College). Special Course in Chemistry, Physics, Botany, Geology, and Mathematics. 1912–16, Assistant Chemist, Messrs. Pattinson and Stead, Middlesbrough. 1916–18, Assistant Chemist, Inspection Department, Ministry of Munitions, at the Royal Arsenal, Woolwich, and in the High Explosives Inspection Department, Leeds. 1919–date, Assistant Chemist, Messrs. Pattinson and Stead. Now partner in the firm of Pattinson and Stead. (*Signed by*) Cecil H. Desch, J. T. Dunn, J. G. Taylor.

SWAN, RICHARD LESLIE, 221, Bedford Rd., Rock Ferry, Cheshire. British. Assistant Chemist in the works laboratory of Lever Brothers, Ltd., Port Sunlight. Associate of the Royal College of Science, London. D.I.C. (research). Associate of Institute of Chemistry. B.Sc. (Hons.), London. Paper on "The Catalytic Effects of Mixtures of Cerium and Thorium Oxides and their Bearing on the Theory of the Welsbach Mantle," has been submitted to the Chemical Society. (*Signed by*) H. B. Baker, Jocelyn Thorpe, James C. Philip.

TAYLOR, GEORGE, Brook Cottage, Matlock Green, Derbyshire. English. Chemist. Associate of the Institute of Chemistry. Studied from 1919–1923 at University College, Nottingham, including one year's research. Assistant Chemist with Home Grown Sugar Coy., Newark, during 1923 campaign. (*Signed by*) H. Baines, H. Phillips, A. G. Crossley, B. D. Shaw.

THORNLEY, SIDNEY, 10, Kersal Avenue, Pendlebury, near Manchester English. Ph.D. Research Student in Chemistry, Victoria University, Manchester. 1st Class Honours, B.Sc. (Victoria). M.Sc. (Victoria); theses entitled, (*a*) "Several experiments on the addition of hydrogen cyanide to ethylidene malonic ester," (*b*) "Condensation of β-aminoanthraquinone and succinic anhydride," the work being performed under the supervision of Professor Lapworth. Dalton Chemical Scholar. At present engaged in research under the supervision of Professor Robinson with a view to qualifying for the degree of Ph.D. (*Signed by*) H. B. Dixon, R. Robinson, Arthur Lapworth, Henry Stephen.

TOPLEY, BRYAN, 104, Park Lane, Croydon. British. Student, Oxford University. B.A. Oxford. Part author of papers in the Proceedings of the Royal Society and in the Transactions of the Chemical Society. (*Signed by*) M. P. Applebey, C. N. Hinshelwood, H. R. Raikes, E. J. Bowen.

TURNER, EMILY GERTRUDE, 2, Steel Bank Villas, Commonside, Sheffield. British. Assistant Lecturer in Chemistry, Sheffield University. M.Sc. (Sheffield). Joint author with Dr. Kenner of the following papers: "Formation of Six- and Seven-Membered Rings from Derivatives of 2 : 2′-Ditolyl," *Trans.*, 1911, **99**, 2101; "A synthesis of Phenanthrene," *Proc.*, 1911, **92**; "Reactions of Dibenzo*cyclo*heptadienone," *Proc.*, 1912, 277. (*Signed by*) M. A. Whiteley, W. P. Wynne, J. Kenner, James C. Philip, Jocelyn Thorpe, Arthur W. Crossley.

WALTON, FRANK PERCY, 121, Culverley Road, Catford, London, S.E. 6. British. Student, Royal College of Science. Seven years' experience at the Wellcome Chemical Research Laboratories, 6, King Street, Snow Hill, Holborn, E.C. 1. (*Signed by*) James C. Philip, J. N. Sugden, T. A. Henry.

WARNE, REGINALD BERNARD, 98, Argyle Rd., West Ealing, W. 13. British. Analytical Chemist and Bacteriologist. I am an expert fat, oil, and milk analyst, and hold the position of chief assistant analyst and

bacteriologist to Messrs. Van den Berghs, margarine manufacturers of Fulham. I have lately been engaged on the separation of pure isolated fatty acids from fats with a view to obtaining more accurate methods of analysis. (*Signed by*) Percy Edgerton, Leslie E. Wakeford, Donald Powell, Stephen B. Bowyer.

WEIR, JOHN, Nobel's Explosive Co., Ltd., Ardeer Factory, Stevenston, Ayrshire. British. Research Chemist. M.A., B.Sc. (St. Andrews). Ph.D. (Würzburg). F.I.C. (*Signed by*) Wm. Rintoul, Thomas J. Nolan, William Barbour.

WESTGARTH, GEORGE CRONE, Wolsingham, Co. Durham. British. Research Student (Chemistry). 1st Class Honours (Chemistry), Final B.Sc. (Dunelm). 16 Months' research in Chemistry. (*Signed by*) W. N. Haworth, J. A. Smythe, C. F. Allpress.

WHITING, WILLIAM ARTHUR, 9, Kensington Ave., Watford, Herts. British. Chief Chemist to Henry H. Butterfield, Analytical, Consulting, and Manufacturing Chemist, Watford. Complete course in Chemistry, chiefly Inorganic, extending over five years. Also 2 years' course in oils, etc., Regent Street Polytechnic. For 3 years Assist. Chemist with Messrs. Chemical and Metallurgical Corp., Willesden. For 2 years Assist. Chemist with Messrs. English Oilfields, Ltd., King's Lynn. For 1½ years Chief Chemist with Messrs. Carbon Products Ltd., Chiswick. For 2 years in present position. I wish to join the Chemical Society in order to keep in touch with recent developments of Chemistry and to have use of the Society's Library. (*Signed by*) T. H. Byrom, P. N. Williams, H. H. Butterfield.

WILLIAMS, FRANK ARCHER, 27, Cotswold Rd., Westcliff-on-Sea. British. Research Chemist. 1922, B.Sc., 1st Class Honours in Chemistry. (*Signed by*) J. R. Partington, A. J. Prince, W. G. Shilling.

WORBOYS, WALTER JOHN, Lincoln College, Oxford. British (Australian). Research Student. Bachelor of Science, University of Western Australia. Research Student, University of Oxford. (*Signed by*) N. V. Sidgwick, E. Hope, S. G. P. Plant.

The following Certificates have been authorised by the Council for presentation to ballot under Bye-Law I (2).

LAZARUS, LIONEL, 18, Crart Avenue, Durban, Natal. British (S.A. Colonial). Analytical Chemist. Head chemist, S.A. Oil and Fat Industries, Jacobs, Natal. Seven years student, Natal Technical College, Durban (N.A.T.C. Diploma). (*Signed by*) Chas. Douglas Golding, E. A. Halm.

MILES, JOHN LAURENCE, 36, Merian St., Lexington, Mass., U.S.A. United States Citizen. Research Student, Harvard University. Working simultaneously two problems under Dr. Kohler and Dr. Kemble. I have served as a chemist in analytical work for the Atlantic Carbium Co., Chelsea, Mass., and as a research chemist for the Eastman Kodak Co., but feeling my knowledge inadequate have returned to Harvard for further study. (*Signed by*) T. W. Richards.

ADDITIONS TO THE LIBRARY.

I. *Donations.*

BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE. Fifth report on colloid chemistry and its general and industrial applications. (With index to the five reports.) London 1923. pp. iv + 130. 2*s*. 6*d*. net. (*Recd*. 19/12/23.)

From the Department of Scientific and Industrial Research.

CLOWES, FRANK, and COLEMAN, JOSEPH BERNARD. Quantitative chemical analysis adapted for use in the laboratories of colleges, of technical institutes, and of analysts. 12th edition. London 1924. pp. xxiv + 576. ill. 18*s*. net. (*Recd*. 7/1/24.)

From the Publishers: Messrs. J. & A. Churchill.

CUMMING, WILLIAM MURDOCH, HOPPER, ISAAC VANCE, and WHEELER, THOMAS SHERLOCK. Systematic organic chemistry: modern methods of preparation and estimation. London 1923. pp. xxiv + 535. ill. 25*s*. net. (*Recd*. 19/12/23.)

From the Publishers: Messrs. Constable & Co.

ROYAL COLLEGE OF SCIENCE CHEMICAL SOCIETY. Journal. Vol. I. Containing the papers read before the Society during the session 1913 to 1914. London 1915. pp. xiv + 74. ill. (*Reference*.) From the Secretary.

SEARLE, ALFRED BROADHEAD. The chemistry and physics of clays and other ceramic materials. London 1924. pp. xiv + 696. ill. 55*s*. net. (*Recd*. 6/12/23.)

From the Publishers: Messrs. Ernest Benn.

SMYTHE, JOHN ARMSTRONG. Lead: its occurrence in nature, the modes of its extraction, its properties and uses, with some account of its principal compounds. London 1923. pp. viii + 344. ill. 16*s*. net. (*Recd*. 28/11/23.)

From the Publishers: Messrs. Longmans, Green & Co.

SPIELMANN, PERCY EDWIN. The genesis of petroleum. London 1923. pp. vi + 72. 5*s*. net. (*Recd*. 26/11/23.) From the Author.

THURSTON, AZOR. Pharmaceutical and food analysis: a manual of standard methods for the analysis of oils, fats, and waxes, and substances in which they exist; together with allied products. London 1923. pp. xiv + 416. ill. 21*s*. net. (*Recd*. 19/11/23.)

From the Publishers: Messrs. Chapman & Hall.

URAL. A collection of technical and economical articles. Vol. I. Ekaterinberg 1922. (*Reference*.) [In Russian.]

From the Publishers.

VAN NOSTRAND'S Chemical Annual: a handbook of useful data for analytical, manufacturing, and investigating chemists, chemical engineers, and students. 5th issue, 1922. Edited by JOHN

CHARLES OLSEN, assisted by T. R. LECOMPTE. [New York] 1923. pp. xxii + 900. ill. (*Reference.*) 21*s.* net.

From the London Publishers: Messrs. Constable & Co.

WARNES, ARTHUR ROBERT. Coal tar distillation and working up of tar products. 3rd edition. London 1923. pp. xvi + 512. ill. 45*s.* net. (*Recd.* 30/11/23.)

From the Publishers: Messrs. Ernest Benn.

II. *By Purchase.*

AEBY, JULES. Dangerous goods. 2nd edition. Anvers 1922. pp. xii + 320. (*Reference.*) 30*s.* net.

ALLEN, ALFRED HENRY. Commercial organic analysis. 5th edition. Edited by SAMUEL S. SADTLER, ELBERT C. LATHROP, and CHARLES AINSWORTH MITCHELL. Vol. I, etc. London 1924 +. (*Reference.*) 30*s.* net.

BRUNSWIG, H. Explosivstoffe auf Grund des in der Literatur veröffentlichten Materials. 2nd edition. Leipzig 1923. pp. xiv + 216. ill. (*Recd.* 19/11/23.)

BRUTTINI, ARTURO. Uses of waste materials: the collection of waste materials and their uses for human and animal food, in fertilisers, and in certain industries, 1914—1922. London 1923. pp. xx + 368. ill. 12*s.* net. (*Recd.* 18/12/23.)

DRYSDALE, C. V. [and others]. The mechanical properties of fluids: a collective work. London 1923. pp. xvi + 362. ill. 20*s.* net. (*Recd.* 15/1/24.)

FOURNIER D'ALBE, EDMUND EDWARD. The life of Sir William Crookes. London 1923. pp. xx + 414. ill. 25*s.* net. (*Recd.* 18/12/23.)

FREUNDLICH, HERBERT. Kapillarchemie. 3rd edition. Leipzig 1923. pp. xvi + 1226. ill. (*Recd.* 6/12/23.)

GIBBS, WILLIAM E. Clouds and smokes: the properties of disperse systems in gases and their practical applications. London 1924. pp. xiv + 240. ill. 10*s.* 6*d.* net. (*Recd.* 28/12/23.)

HARBORD, FRANK WILLIAM, and HALL, JOHN W. The metallurgy of steel. 7th edition. 2 vols. London 1923. pp. xii + [560], xvi + 554. ill. 64*s.* net. (*Recd.* 6/12/23.)

INSTITUTE OF PHYSICS, with the co-operation of the NATIONAL PHYSICAL LABORATORY. Journal of Scientific Instruments: a monthly publication dealing with their principles, construction, and use. Preliminary number, May 1922. Vol. I, etc. London 1923 +. (*Reference.*)

KÖNIG, JOSEF. Die Untersuchung landwirtschaftlich und landwirtschaftlich-gewerblich wichtiger Stoffe. 5th edition. Vol. I. Berlin 1923. pp. xvi + 950. ill. (*Recd.* 19/12/23.)

KRAMERS, H. A., and HOLST, HELGE. The atom and the Bohr theory of its structure: an elementary presentation. [Translated from the Danish by R. B. LINDSAY and RACHEL T. LINDSAY.] London 1923. pp. xiv + 210. ill. 10*s*. 6*d*. net. (*Recd*. 18/12/23.)

M'INTOSH, JOHN GEDDES. Industrial alcohol: the production and use of alcohol for industrial purposes, for use as an illuminant and as a source of motive power. 2nd edition. By HERBERT BIRTWHISTLE STOCKS. London 1923. pp. xii + 400. ill. 12*s*. 6*d*. net. (*Recd*. 18/12/23.)

MARILLER, CHARLES. Manuel du distillateur. Paris 1923. pp. iv + 305. ill. (*Recd*. 22/11/23.)

MARTIN, GEOFFREY. The modern soap and detergent industry, including glycerol manufacture: a complete practical treatise in three volumes. Vol. I. London 1924. pp. xii + [370]. ill. 36*s*. net. (*Recd*. 15/1/24.)

MAYRHOFER, ADOLF. Mikrochemie der Arzneimittel und Gifte: die offizinellen anorganischen und organischen Säuren und ihre Salze. Berlin 1923. pp. xxii + 286. ill. (*Recd*. 28/11/23.)

MIKROCHEMIE: Zeitschrift für das Gesamtgebiet der Mikrochemie und Mikrophysik. Year I, etc. Wien 1923 +. (*Reference*.)

PAUL, JAMES HUGH. Boiler chemistry and feed water supplies. 2nd edition. London 1923. pp. xii + 252. ill. 14*s*. net. (*Recd*. 28/12/23.)

PRINGSHEIM, HANS. Die Polysaccharide. 2nd edition. Berlin 1923. pp. vi + 234. (*Recd*. 6/12/23.)

RISTENPART, EUGEN. Chemische Technologie der Gespinstfasern: praktisches Hilfs- und Lehrbuch für Bleicher, Färber, Drucker und Ausrüster sowie zum Unterricht an Fach- und Hochschulen. Part I. Berlin 1923. pp. viii + 322. ill. (*Recd*. 19/12/23.)

ROUX, ULYSSE. La grande industrie des acides organiques: Bitartrate de potassium. Acide tartrique. Acide citrique. 2nd edition. By ALBERT AUBRY. Paris 1923. pp. viii + 560. ill. (*Recd*. 22/11/23.)

SAVAGE, WILLIAM GEORGE. Canned foods in relation to health. (Milroy Lectures, 1923.) Cambridge 1923. pp. viii + 146. ill. 8*s*. 6*d*. net. (*Recd*. 15/1/24.)

SEARLE, ALFRED BROADHEAD. Sands and crushed rocks. 2 vols. London 1923. pp. xiv + 476, x + 282. ill. 52*s*. 6*d*. net. (*Recd*. 15/1/24.)

WARDLE, ROBERT A., and BUCKLE, PHILIP. The principles of insect control. Manchester 1923. pp. xvi + 296. ill. 20*s*. net. (*Recd*. 18/12/23.)

WARREN, CYPRIAN ALFRED. Brewing waters: a reprint after

revision of a series of articles from *The Brewing Trade Review*. London 1923. pp. iv + 117. ill. 10*s*. net. (*Rced.* 31/12/23.)

III. *Pamphlets.*

ASKEW, H. O. The solubility and hydrolysis of calcium carbonate. (From the *Trans. New Zealand Inst.*, 1923, **54**.)

BANGKOK, SIAM. *Ministry of Commerce.* The Government Laboratory. 1st Report, etc. Bangkok 1923 +.

BROOKS, MATILDA MOLDENHAUER. The penetration of arsenic into living cells. (From the *Proc. Soc. Exper. Biol. Med.*, 1922, **20**.)

—— New quantitative observations on the penetration of acids and alkali bicarbonates into living and dead cells. (From the *Proc. Soc. Exper. Biol. Med.*, 1923, **20**.)

—— Studies on the permeability of living and dead cells. I and II. (From the *U.S. Public Health Reports*, 1923, **38**.)

IRWIN, MARIAN, and WEINSTEIN, MARGARET. Comparative studies on respiration. XXI. Acid formation and decreased production of CO_2 due to ethyl alcohol. (From the *Amer. J. Bot.*, 1922, **9**.)

KNIBBS, SIR GEORGE HANDLEY. Science and its service to man: Presidential address to the Australasian Association for the Advancement of Science, 1923. Wellington 1923. pp. 46.

LYON, C. J. Comparative studies on respiration. XVIII. Respiration and antagonism in Elodea. (From the *Amer. J. Bot.*, 1921, **8**.)

MOIR, JAMES. Colour and chemical constitution. Part XVII. The azo dyes and other monocyclic colours. (From the *Trans. Roy. Soc. S. Africa*, 1923, **10**.)

POLAND. I^{szy} Zjazd Chemików Polskich: w Warszawie, 3–6 Kwietnia Roku 1923. Warszawa 1923. pp. xxiv + 64.

RABER, ORAN L. A quantitative study of the effect of anions on the permeability of plant cells. II. (From the *Amer. J. Bot.*, 1921, **8**.)

—— The effect upon permeability of polyvalent cations in combination with polyvalent anions. (From the *Amer. J. Bot.*, 1921, **8**.)

—— The effect upon permeability of (i) the same substance as cation and anion, and (ii) changing the valency of the same ion. (From the *Amer. J. Bot.*, 1921, **8**.)

SCIENTIFIC AND INDUSTRIAL RESEARCH, Department of. *Food Investigation Board.* Special Report No. 14, by the Engineering Committee. The thermal properties of ethyl chloride. By CHARLES FREWEN JENKIN and D. N. SHORTHOSE. London 1923. pp. vi + 36. ill.

TECHNOLOGY DEPT PUBLIC LIBRARY
DETROIT MICH.

PROCEEDINGS

OF THE

CHEMICAL SOCIETY.

Ordinary Scientific Meeting, Thursday, February 7th, 1924, at 8 p.m., Professor W. P. WYNNE, D.Sc., F.R.S., President, in the Chair.

The PRESIDENT referred to the loss sustained by the Society, through death, of the following Fellows:

	Elected.	Died.
Lawrence Briant	Dec. 6th, 1883.	Jan. 30th, 1924.
Philip Buckle	June 17th, 1920.	Jan. 16th, 1924.
John Daniel Custance	Dec. 15th, 1881.	Dec. 15th, 1923.
Surendranath Dhar	May 1st, 1919.	Dec. 9th, 1923.
James Laker Macmillan	April 17th, 1879.	?
John Rymer Young	June 21st, 1877.	Nov. 13th, 1923.

The PRESIDENT referred to the following statement concerning the work of the Bureau of Chemical Abstracts:

As already announced, the Bureau of Chemical Abstracts was formed in the latter part of 1923, as the result of a joint agreement between the Councils of the Chemical Society and the Society of Chemical Industry, with the object of co-ordinating and, if possible, unifying the abstracts hitherto published separately by the two Societies. The work of the Bureau is in the hands of a Committee consisting of four representatives from each Society, with Prof. J. C. Philip as Chairman.

The Bureau was, at an early stage, called upon to deal with the position created by the resignation, through ill-health, of Mr. A. J. Greenaway, who has been connected, for a long period of years, with the publications of the Chemical Society. His experience, fortunately, is at the disposal of the Bureau in its reorganisation of the production of abstracts.

The Bureau has now arranged for a single homogeneous editorial staff, which will, in future, be responsible for the preparation and production of the abstracts both in pure and applied chemistry. The chief Editor, who will be responsible for the organisation of the

scheme and the general control of the abstracts, is Mr. T. F. Burton, who for the past nine years has been Editor of the Transactions and Abstracts issued by the Society of Chemical Industry.

The further decision has been reached that the abstracts in each particular section should, as far as possible, come under the review of an Assistant-Editor, with special knowledge of the subjects covered by the section. The Bureau has, accordingly, appointed the following as Assistant-Editors :—H. M. Dawson (General and Physical Chemistry), A. A. Eldridge (Inorganic and Analytical Chemistry), W. E. Garner (General and Physical Chemistry), H. J. Page (Biochemistry), E. H. Rodd (Organic Chemistry; Aromatic Division), A. Shonk (Applied Chemistry), E. E. Turner (Organic Chemistry; Heterocyclic Division), H. Wren (Organic Chemistry; Aliphatic Division).

It is felt that this move in the direction of securing unity in editorial and technical control represents a distinct step towards the achievement of the objects of the Bureau.

The following were formally admitted Fellows of the Chemical Society: E. N. Allott and G. Thomas.

Certificates were read for the first time in favour of:

Wilson Birchenough, B.Sc., 47, Petworth Road, Friern Barnet.
Alfred Cecil Cramp, Palmer's School, Grays.
Joseph John Etridge, B.Sc., 24, Lynmouth Road, Stamford Hill, N. 16.
Frederick Kenneth Ewart, B.A., Exeter College, Oxford.
Herbert Firth, Poplar Cottage, Scholes, Cleckheaton.
Percy Gillman, B.Sc., Oakmount School, Arnside.
Foad Mikhail Gindi, B.Sc., The University, Edmund Street, Birmingham.
Hubert Teare Harry, B.Sc., Northleigh, Tywardreath, Par Station.
Francis William Hodges, B.Sc., 30, Forest Road, Kew.
John Alexander Hogg, Burston House, Pittville Circus, Cheltenham.
Harold Vivian Horton, B.Sc., A.I.C., 9, Brambledown Road, Wallington.
John Innes, B.Sc., 1, Trinity Street, Hawick.
Ram Chandra Khanna, B.Sc., Khalsa A.V. School, Lyallpur, India.
Louis Klein, B.Sc., 44, Downs Park Road, Hackney, E. 8.
Joseph Malsbury, 6, Gordon Road, Weston-super-Mare.
Godfrey Vincent John Maxted, B.A., Elloughton, Brough, Yorks.
Eric George Kemp Pritchett, 5, Willows Crescent, Cannon Hill, Birmingham.
Thomas Roberts, 17, Earle Street, Wrexham.
Ralph John Seal, B.Sc., A.I.C., 14, Woodend, Sutton.
Ian Charles Park Smith, 6, Dermody Gardens, Lewisham, S.E. 13.
Charles Mansfield Swain, 6, High Street, Langley, Birmingham.
Joseph Hughes Williams, B.Sc., 31, Salt Avenue, Stafford.
Frank Beresford Windle, 16, Perryn Road, Acton, W. 3.

The following papers were read:

"The activity of hydrogen-ion in aqueous solutions of hydrofluoric acid." By W. F. K. W. Jones and L. J. Hudleston.

"The solubility of the aminophenols." By N. V. SIDGWICK and R. K. CALLOW.

"Abnormal benzene derivatives." By N. V. SIDGWICK and R. K. CALLOW.

"The conductivity and ionisation of solution of potassium iodide in nitromethane." By J. C. PHILIP and H. B. OAKLEY.

"The solubility of aniline sulphonic acids." By J. C. PHILIP and R. S. COLBORNE.

"Mercuration of nitrohydroxybenzaldehydes." By T. A. HENRY and T. M. SHARP.

Ordinary Scientific Meeting, Thursday, February 21st, 1924, at 8 p.m., Professor W. P. WYNNE, D.Sc., F.R.S., President, in the Chair.

The PRESIDENT referred to the loss sustained by the Society, through death, of :

	Elected.	Died.
John Fenton Newall.....	June 16th, 1892.	Feb. 5th, 1924.
John James Beaumont Rees	Feb. 17th, 1910.	?
Frederick George Adair Roberts ...	June 21st, 1883.	Feb. 10th, 1924.

The PRESIDENT announced that the Council had resolved to award the Longstaff Medal this year to Prof. F. G. Donnan, F.R.S.

Certificates were read for the first time in favour of :

Profulla Kumar Banerjee, 37/1 Kasimitter's Ghat Street, Calcutta.
John Barnett, B.Sc., A.I.C., 111, Kingsley Avenue, West Ealing, W. 13.
Maurice John Burgess, 48, Sandford Grove Road, Nether Edge, Sheffield.
Aubrey Wilson Dye, Invertiel, Martin Road, Centennial Park, Sydney.
Frederick Charles Randall, M.Sc., A.I.C., 10, Beauchamp Avenue, Leamington Spa.
Archibald Lewis Roberts, 4, Victoria Street, Shrewsbury.

The following Certificates have been authorised by the Council for presentation to ballot under Bye-Law I (2) in favour of :

Frederick William Webb Butler, 8, Forest Road, Bulwer Park, Durban.
Stanislaw Kazimierz Kon, Ph.D., ul. Piekna 41m. 6, Warsaw.
Pramatha Nath Paul, B.Sc., Ramtek P.O., C.P., India.

Messrs. G. W. Clough and E. W. Lewis were elected Scrutators, and a ballot for the election of Fellows was held. The following were subsequently declared elected as Fellows :

William Richardson Anderson, B.Sc.
Reginald Graham Atkinson, A.R.C.S.
Charles Edward Baldwin, B.A., A.I.C.
Wilfrid Barnard S. Bishop, B.Sc.
Thomas Ethelred Wilby Browne, B.Sc.
Francis Herbert Culverhouse Butler, B.A., A.I.C.
Harold John Channon, B.A., B.Sc.
Frederick William Jeffrey Clendinnen, M.Sc.
Alan Rowland Cluer, B.Sc., A.R.C.S.
George Duncan Crosley.
Reginald Stanley Crowle.
William Murdoch Cumming, B.Sc., F.I.C.
Talati Dadabhai Cursedji, D.T.M., D.P.H.
John Dall.
Henry George Denham, M.A., D.Sc., Ph.D.
Winifred Esther Dickes, B.Sc.
Richard Byron Duerden, B.Sc., A.I.C.
Sikhibhushan Dutt.
Philip Eggleton, B.Sc.
Ernest William Ewell.
Maurice Duncan Farrow, B.Sc., A.R.C.S.
Charles Richmond Featherstone, B.A.
Frederick Basil Garner, B.Sc., A.I.C.
Roy William Harman, M.Sc.
Hugh Harper, B.Sc.
Frank Hindle.
Ralph Percival Hobson, B.Sc.
Eric Leighton Holmes, A.R.C.S.
Harry Raymond Ing, B.A.
Paul Kestner.
Frederick Charles Lay, B.A.
Lionel Lazarus.
Frederick Measham Lea, M.Sc., A.I.C.
Harry Graham Leigh, B.Sc.
Eva Rebecca Levy.
George Hazlewood Locket, B.A.
George M'Owan, B.Sc., Ph.D.
Walter Matthew Madgin, M.Sc., A.I.C.
Fred Mattingley, B.Sc., A.I.C.
Oscar Adolf Mendelsohn, B.Sc.
John Laurence Miles.
Andrew More, A.R.C.S., F.I.C.
Edward Tom Neathercoat, C.B.E., J.P.
Thomas Richard Owles.
James Ritchie Park, B.Sc.
David Doig Pratt.
John Rae.
Roger Laurent Felix Robert.
Max Rubin.
Alexander Smith Russell, D.Sc.
Edward Samson, L.D.S.
Harold Schofield.
Alfred Scholes, F.I.C.
Harry Nathan Sher, B.Sc., A.R.C.S.
Masuzo, Shikata, D.Chem. (Agric.).
Charles William Shoppee, B.Sc., A.R.C.S.
William Arthur Silvester, M.Sc.
Frank Harold Smith, M.A.
Laurence Frederick Smith, B.Sc., A.R.C.S.
Margaret Llewellyn Smith.
Frederick Arnold Stead.
Richard Leslie Swan, B.Sc., A.I.C.
George Taylor, A.I.C.
Sidney Thornley, M.Sc.
Bryan Topley, B.A.
Emily Gertrude Turner, M.Sc.
Frank Percy Walton.
Reginald Bernard Warne.
John Weir, M.A., B.Sc., Ph.D., F.I.C.
George Crone Westgarth, B.Sc.
William Arthur Whiting.
Frank Archer Williams, B.Sc.
Walter John Worboys, B.Sc.

The following papers were read :

"The rotatory dispersive power of organic compounds. Part XI. Octyl alcohol and octyl oxalate." By T. M. LOWRY and E. M. RICHARDS.

"Investigations on the dependence of rotatory power on chemical constitution. Part XXII. Simple and complex rotatory dispersion." By H. HUNTER.

"The rotatory dispersive power of organic compounds. Part XII. Borneol, camphor, and camphorquinone. Asymmetric atoms and asymmetric molecules." By J. O. CUTTER and T. M. LOWRY.

"The rotatory dispersive power of organic compounds. Part XIII. Halogen derivatives of camphor. Optical superposition in the camphor series." By J. O. CUTTER and H. BURGESS.

ANNUAL GENERAL MEETING.

The Annual General Meeting will take place on Thursday, March 27th, 1924, at 4 p.m., when the President, Professor W. P. WYNNE, D.Sc., F.R.S., will deliver his Address.

INFORMAL DINNER.

An Informal Dinner will be held at the Hotel Cecil, Strand, W.C., on Thursday, the 27th March, 1924 (the day of the Annual General Meeting) at 7 for 7.30 p.m.

The toast list will be a short one, the speeches, which will not exceed six in number, being brief; a programme of music will be arranged, and opportunities will be given for social intercourse before and during the dinner.

Tickets, price 7*s.* each (including gratuities to waiters) can be obtained from the Assistant Secretary, Chemical Society, Burlington House, Piccadilly, W. 1, on receipt of a remittance (made payable to Mr. S. E. Carr) for the number of tickets required.

It will facilitate arrangements if Fellows will apply for tickets at an early date, in any event before March 20th.

List of papers, or Abstracts thereof, received between January 18th, 1924, and February 21st, 1924. (This list does not include the titles of papers which have been read at a Scientific Meeting, or which have appeared in the Journal.)

"The reaction between phosphorous acid and mercuric chloride." By A. D. MITCHELL.

"The volumetric estimation of titanium." By A. M. MORLEY and J. K. WOOD.

"Nitrosulphophenyldehydrothiotoluidinesulphonic acid." By D. H. PEACOCK.

"The action of dry hydrogen chloride on a dry solution of a chloroamine." By F. G. SOPER.

"The freezing-point curves for the system aceto-2-chloroanilide and aceto-4-chloroanilide." By K. J. P. ORTON and G. OWEN.

"The application of Weerman's reaction to a methylated sugar." By J. C. IRVINE and J. PRYDE.

"The constitution of polysaccharides. Part VIII. The molecular structure of β-hexa-amylose." By J. C. IRVINE, H. PRINGSHEIM, and J. MACDONALD.

"The action of the mono- and di-sulphides of sodium on chloronitro-compounds. Part I. 1-Chloro-2-nitro-benzene." By H. H. HODGSON and J. H. WILSON.

"Dyes of the aurin type. Part II." By H. BAINES and J. E. DRIVER.

"The chlorination of ethyl alcohol." By F. D. CHATTAWAY and O. G. BACKEBERG.

"Formation of quaternary ammonium salts. Part II." By E. DE B. BARNETT, J. W. COOK, and W. C. PECK.

"Optically active β-phthalimino-β-phenylpropiophenones." By A. MCKENZIE and T. M. A. TUDHOPE.

"The effect of complex formation on oxidation potentials: the influence of the cyanide-ion on the ferro-ferricyanide potential." By J. A. V. BUTLER and G. P. DAVIES.

"The oxidation of sabinene with chromyl chloride. A correction." By G. G. HENDERSON and J. M. ROBERTSON.

"The optically active sulphilimines." By F. G. MANN and W. J. POPE.

"The dissolution of gelatin. Part II." By F. FAIRBROTHER.

"The isomorphism of the amides and substituted amides of dichloro- and chloroiodo-acetic acids, and of chlorobromo- and chloroiodo-acetic acids." By P. V. MCKIE.

"Investigations on the dependence of rotatory power on chemical constitution. Part XXIII. The normal aliphatic ethers of *d*-γ-nonanol." By J. KENYON and T. W. BARNES.

"Further applications of thallium compounds. Part I. Thallous hydroxide." By R. C. MENZIES and E. M. WILKINS.

"Cryoscopy in sodium sulphate decahydrate." By E. E. TURNER and W. H. PATTERSON.

"The mutarotation of the sugars." By R. GILMOUR.

"Glycogen. Part I. Partial methylation, and the isolation of methylated glucoses." By A. K. MACBETH and J. MACKAY.

"The reaction between lime and nitrogen peroxide." By J. R. PARTINGTON and F. A. WILLIAMS.

"Varying valency of gold with respect to mercaptanic radicles. Part I." By P. C. RÂY.

"A study of colour in complex diazoles. Part I." By G. C. CHAKRAVARTI.

"The velocity of benzylation of certain amines." By D. H. PEACOCK.

"Derivatives of 3-oxy(1)thionaphthen." By L. R. Hart and S. Smiles.

"The action of nitrogen peroxide on cuprous oxide." By J. R. Partington.

"The reduction of nitronaphthalenes. Part II. Reduction of β-nitronaphthalene." By W. M. Cumming and G. S. Ferrier.

"The slow hydrolysis of complex salts. Part I. Chloropentamminecobalt chloride." By F. G. Tryhorn and G. Jessop.

"The hydrogen overvoltage of zinc." By G. M. Westrip.

"The formation of 3-halogenocarbazoles from carbazole-3-diazonium halides." By S. H. Tucker.

"The sulphonation of glyoxalines. Part II." By R. Forsyth, J. A. Moore, and F. L. Pyman.

"Induced alternate polarities in a carbon chain on the basis of Bohr's theory." By K. Hojendahl.

"Researches on phellandrenes. Part II." By H. G. Smith, P. G. Carter, and J. Read.

"Influence of intensive drying on inner equilibria." By A. Smits.

"A new apparatus for chemical reactions in the presence of light." By R. G. Atkinson.

"The dimorphism of diphenylarsenious chloride (diphenylchloroarsine)." By C. S. Gibson and (the late) D. C. Vining.

"The isomerism of the oximes. Part XVII. The action of 2 : 4-dinitrochlorobenzene on some isomeric aldoximes." By O. L. Brady and R. Truszkowski.

"On the thermal decomposition of chlorine monoxide." By J. Zawidzki.

"On the velocity of nitration of phenol." By J. Zawidzki.

"Derivatives of semioxamazide. Part II." By F. J. Wilson and E. C. Pickering.

"Influence of colloids on the rate of reactions involving gases. Part II. Decomposition of hydrogen peroxide and of nitrosotriacetonamine." By A. Findlay and W. Thomas.

"The ultra-violet absorption spectrum of eugenol." By G. Thompson.

"The action of thionyl chloride on alizarin. A correction." By A. Green.

"On the reactivity of solid phases." By J. A. Hedvall.

"The purification of acetic acid." By K. J. P. Orton and A. E. Bradfield.

"Tellurium monoxide." By J. J. Doolan and J. R. Partington.

"Polymorphic nitrobenzal hydrazones." By F. D. Chattaway and A. J. Walker.

ADDITIONS TO THE LIBRARY.

I. *Donations.*

BEDFORD, CLAYTON W., and WINKELMANN, HERBERT A. Systematic survey of rubber chemistry: a bibliography, with copious abstracts, of the entire literature of rubber chemistry and closely allied subjects . . . together with a patent index, and introductory chapters summarizing the present status of rubber chemistry. New York 1923. pp. 386. (*Reference.*) $7 net.

From the Publishers: The Chemical Catalog Company, Inc.

CONGRESSO NAZIONALE DI CHIMICA PURA ED APPLICATA. I. Atti. Roma 1923. pp. xxviii + 512. (*Reference.*)

From the Secretary.

GARDNER, WILLIAM. Chemical synonyms and trade names: a dictionary and commercial handbook. London 1924. pp. vi + 271. (*Reference.*) 25*s.* net.

From the Publishers: Messrs. Crosby Lockwood & Son.

HALSE, EDWARD. Cobalt ores. (Imperial Institute Monograph on Mineral Resources.) London 1924. pp. x + 54. ill. 3*s.* 6*d.* net. (*Recd.* 25/1/24.) From the Director.

HITCHCOCK, FRANK LAUREN, and ROBINSON, CLARK SHOVE. Differential equations in applied chemistry. New York 1923. pp. vi + 110. ill. 7*s.* 6*d.* net. (*Recd.* 24/1/24.)

From the London Publishers: Messrs. Chapman & Hall.

IMPERIAL INSTITUTE. Vanadium ores. (Imperial Institute Monograph on Mineral Resources.) London 1924. pp. x + 72. 5*s.* net. (*Recd.* 8/2/24.) From the Director.

MYDDLETON, WILLIAM WHALLEY, and BARRY, THOMAS HEDLEY. Fats: natural and synthetic. London 1924. pp. xii + 182. ill. 25*s.* net. (*Recd.* 4/2/24.)

From the Publishers: Messrs. Ernest Benn.

ORGANIC SYNTHESES: an annual publication of satisfactory methods for the preparation of organic chemicals. Vol. III. Edited by HANS THACHER CLARKE [and others]. New York 1923. pp. vi + 104. ill. 7*s.* 6*d.* net. (*Recd.* 24/1/24.)

From the London Publishers: Messrs. Chapman & Hall.

RAIZISS, GEORGE W., and GAVRON, JOSEPH L. Organic arsenical compounds. New York 1923. pp. 570. $7 net. (*Recd.* 23/1/24.)

From the Publishers: The Chemical Catalog Company, Inc.

ECHNOLOGY DEPT

PUBLIC LIBRARY
JUN 17 1924
DETROIT.

PROCEEDINGS

OF THE

CHEMICAL SOCIETY.

MEETING held in the Lecture Hall of the Institution of Mechanical Engineers, on Thursday, February 28th, 1924, at 8 p.m., Professor W. P. WYNNE, D.Sc., F.R.S., President, in the Chair.

Professor J. Joly, F.R.S., delivered the Hugo Müller Lecture, entitled: "The Radioactivity of the Rocks." A vote of thanks to the Lecturer, proposed by Professor H. B. Dixon, F.R.S., and seconded by Dr. A. S. Russell, was carried with acclamation, Professor Joly making acknowledgment.

Ordinary Scientific Meeting, Thursday, March 6th, 1924, at 8 p.m., Professor W. P. WYNNE, D.Sc., F.R.S., President, in the Chair.

The PRESIDENT referred to the loss sustained by the Society, through death, of the following Fellows:

	Elected.	Died.
Ernst Bentz	Dec. 4th, 1890.	Feb. 20th, 1924.
Albert Francis Wenger	Dec. 6th, 1917.	Feb. 25th, 1924.

The following List of Nominations for vacant places on the Council was read from the Chair:

Secretary.—C. S. Gibson.

Vice-Presidents who have filled the office of President (two vacancies).—Sir James J. Dobbie; W. H. Perkin.

Vice-Presidents who have not filled the office of President (two vacancies).—A. J. Greenaway; James C. Philip.

Ordinary Members of Council: (*a*) Town Members, that is, those resident within 50 miles of Charing Cross (three vacancies).—O. L. Brady; A. E. Dunstan; T. S. Moore. (*b*) Country Members, that is, those resident beyond 50 miles from Charing Cross (three vacancies).—D. R. Boyd; B. Lambert; F. L. Pyman.

The following were formally admitted Fellows of the Chemical

Society: G. D. Crosley, E. R. Levy, S. I. Levy, M. L. Smith, and F. A. Williams.

Certificates were read for the first time in favour of:

Ernest George Churchill, M.Sc., A.I.C., 66, Victoria Avenue, East Ham, E. 6.
Thomas Henry Hamnett, 1, Belmont Road, Clapham, S.W. 4.
Dudley Jenkin, 9, Fenchurch Street, E.C. 3.
Jessie Mary Landon, B.Sc., 59, Tressillian Road, St. John's, S.E. 4.
Douglas McKie, B.Sc., 59, Dartmouth Park Hill, N.W. 5.
Frank Bertram Phillips, B.Sc., 64, Airedale Avenue, Chiswick, W. 4.
Bodh Raj Sobti, M.Sc., Scindia Chemical Laboratories, Gwalior, India.
George Watson Young, B.Sc., 97, Stockton Road, West Hartlepool.

The following papers were read:

"The reaction between lime and nitrogen peroxide." By J. R. Partington and F. A. Williams.

"Tellurium monoxide." By J. J. Doolan and J. R. Partington.

"The isomerism of the oximes. Part XVII. The action of 2 : 4-dinitro-chlorobenzene on some isomeric aldoximes." By O. L. Brady and R. Truszkowski.

"The dimorphism of diphenylarsenious chloride (diphenylchloroarsine)." By C. S. Gibson and (the late) D. C. Vining.

Ordinary Scientific Meeting, Thursday, March 20th, 1924, at 8 p.m., Professor W. P. Wynne, D.Sc., F.R.S., President, in the Chair.

The President referred to the loss sustained by the Society, through death, of the following Fellows:

	Elected.	Died.
Chichester Alexander Bell	Dec. 2nd, 1886.	March 11th,
George Henry Hughes	June 17th, 1880.	March 16th.

The President announced:

1. That the Council had sealed the following Address of Congratulation which had been presented that day to the Physical Society of London on the celebration of its Jubilee:

> "In the name of the Chemical Society we offer to the Physical Society the warmest congratulations upon the completion of an half-century of devotion to that science which both have the honour to serve.
>
> "In the long task of probing the inward mechanisms of matter; in resolving matter, stage by stage, into bodily objects of ever-smaller scale and ever-wider universality, the two sister sciences labour and have so long laboured in unison, that their purposes can justly be called one and the same.
>
> "The help received by the one branch in any generation is

repaid to the other in the next: chemistry revealed the atom, and, if it suggested the molecule, physics made actual the ideal; when physics had laid down the canons of energy, chemistry used them to find the ion; physics discovered the electron in which is sought the origin of the action of chemical valency; when chemistry had classified the elementary atoms physics was soon to offer a clue to the rhythms thus perceived, and, by means of that even coupling of abstract theory with concrete experiment in which British physics has no rival, to make the profoundest analysis yet achieved of the intimate structure of matter and the interactions of its finest parts.

"It is the strong hope of British chemists that the marriage of their endeavours with those of the physicists—a union never happier than now—may find expression and sustenance in the closest companionship between the Chemical Society and the Physical Society, the attainment of whose Jubilee is a rich source of satisfaction to the scientific world.

"Signed on behalf of the Council of
The Chemical Society.

W. P. WYNNE, *President.*
J. F. THORPE, *Treasurer.*
L.S. IRVINE MASSON, JAMES C. PHILIP, } *Secretaries.*
ARTHUR W. CROSSLEY, *Foreign Secretary.*

"Sealed in Council this Twentieth day of March, One thousand nine hundred and twenty-four."

2. That the Faraday Lecture will be delivered by Professor R. A. Millikan, at the Royal Institution, Albemarle Street, W. 1., on Thursday, June 12th, 1924, at 8.30 p.m., instead of June 26th as previously announced.

The following were formally admitted Fellows of the Chemical Society: R. P. Hobson and J. R. Park.

Certificates were read for the first time in favour of:

Allah Bakhsh, M.A., B.Sc., Muslim University, Aligarh, India.
Charles Montague Bere, B.Sc., Cockhaynes, Silverton, Exeter.
Wilfrid Henry Edwards, Imperial College of Science, S. Kensington, S.W. 7.
George Hagues, B.Sc., A.I.C., 54, White Street, Hull.
John William Humpleby, 6, Leader Williams Road, Irlam, Manchester.
James Pickett Laurie, 65, Parchment Street, Winchester.
Edith Morrison, B.Sc., 27, Lilley Road, Fairfield, Liverpool.
Binay Chandra Mukerjee, M.Sc., Office of Metallurgical Inspector, Jamshedpur, India.
Ronald Charles Odams, B.A., 28, Milton Road, Cambridge.
William John Watkins, 49, Hazelwood Road, Northampton.
Walter Ambrose Woodrow, 8, Berkeley Road, Manor Park, E.

The following papers were read :

"The action of thionyl chloride on alizarin. A correction." By A. GREEN.

"Rotatory dispersion of derivatives of tartaric acid. Part I. Methylene derivatives." By P. C. AUSTIN and V. A. CARPENTER.

"The rotatory dispersive power of organic compounds. Part XV. The molecular weight of ethyl tartrate and the origin of anomalous rotatory dispersion in tartaric acid and its derivatives." By T. M. LOWRY and J. O. CUTTER.

"The heat of adsorption of oxygen by charcoal." By E. A. BLENCH and W. E. GARNER.

"Ring-chain tautomerism. Part X. Inhibited tautomerism." By F. DICKENS, L. HORTON, and J. F. THORPE.

REPORTS ON THE PROGRESS OF APPLIED CHEMISTRY.

(Issued by the Society of Chemical Industry.)

The Society of Chemical Industry has offered to supply the Reports on the Progress of Applied Chemistry for 1923 to Fellows of the Chemical Society, who are not Members of the Society of Chemical Industry, at the reduced price of 10*s*.

Orders, with remittance, should be sent to Dr. J. P. Longstaff, Secretary, Society of Chemical Industry, 46 and 47, Finsbury Square, London, E.C. 2.

List of papers, or Abstracts thereof, received between February 22nd, and March 20th, 1924. (This list does not include the titles of papers which have been read at a Scientific Meeting, or which have appeared in the Journal.)

"Tautomerism in the malonic acid and pyruvic acid series: evidence for the hydrazone structure of the tautomers." By H. R. STEVENS and F. W. WARD.

"The isomerism of the oximes. Part XVIII. Some bromo- and nitro-substituted mono- and di-methoxybenzaldoximes." By O. L. BRADY and L. B. MANJUNATH.

"The kinetics of sucrose inversion." By S. W. PENNYCUICK.

"The sulphonation of meta-dinitrobenzene." By R. H. GRIFFITH.

"The nitration of para-bromoacetanilide." By R. H. GRIFFITH.

"Sedimentation of bentonite." By H. F. COWARD.

"Note on the photochemical inversion of sucrose by short infra-red radiation." By W. H. GARRETT, P. S. LEWIS, and A. I. ESCOLME.

"The photochemistry of the halogen hydrides." By E. J. Bowen.

"The first law of photochemistry." By M. C. C. Chapman.

"Polarity effects in aromatic halogen compounds." By J. B. Shoesmith, A. C. Hetherington, and R. H. Slater.

"Studies in the anthracene series. Part X." By E. de B. Barnett and M. A. Matthews.

"The dissociation pressures of hydrated double sulphates. Part II. Various double sulphates of the type $M_2SO_4,M_2'SO_4,6H_2O$." By R. M. Caven and J. Ferguson.

"The tolyl esters of orthoformic acid." By J. E. Driver.

"A new method of micro-gas analysis." By L. Reeve.

"Sugar carbonates and their derivatives. Part I." By C. F. Allpress and W. N. Haworth.

"The explanation of chemical phenomena by the magnetic hypothesis." By W. E. J. Trask.

"The bromine compounds of phenanthrene. Part III." By H. Henstock.

"Condensation of acetylene and hydrogen sulphide in presence of catalysts." By M. G. Tomkinson.

"Nitrogen chlorides derived from nitro-substituted acetanilides." By F. D. Chattaway and H. J. Dowden.

"Colour and molecular geometry. Part II. Explanation of the results of Chattaway and Clemo." By J. Moir.

"The influence of the orientation of surface molecules on the surface tension of pure liquids." By S. Sugden.

"A relation between surface tension, density and chemical composition." By S. Sugden.

"Researches on residual affinity and co-ordination. Part XVIII. Interaction of zirconium salts and β-diketones." By G. T. Morgan and A. R. Bowen.

"Researches on residual affinity and co-ordination. Part XIX. Interaction of germanium tetrahalides and β-diketones." By G. T. Morgan and H. D. K. Drew.

"Studies on thallium compounds. Part III. The thallous-thallic halides." By A. J. Berry.

"Action of selenium tetrachloride on di- and tri-ketones. Selenium phenylacetyl- and phenylpropionyl-acetones." By G. T. Morgan and C. R. Porter.

"The relation between the crystal structure and the constitution of carbon compounds. Part II. Crystallography of some further simple substitution products of methane." By I. E. Knaggs.

"The periodic catalytic decomposition of hydrogen peroxide." By E. S. Hedges and J. E. Myers.

"The action between bromine and malonic acid in aqueous solution." By R. W. WEST.

"Experiments on the rate of photochemical change in the solid state." By E. J. BOWEN, H. B. HARTLEY, W. D. SCOTT, and H. G. WATTS.

"The sulphonation of *m*-cresol and its methyl ether." By R. D. HAWORTH, A. LAPWORTH, and [in part] M. L. WILSON.

"A substitute for sodium light in refractometric measurements." By J. K. MARSH.

"The properties of ammonium nitrate. Part VIII. Analysis of crystalline deposits from solution in fused ammonium nitrate." By E. P. PERMAN and D. R. DAWKINS.

"The chemistry of Posidonia fibre. Part II. The cellulose." By J. C. EARL.

"The rotatory dispersive power of organic compounds. Part XIV. Sulphonic derivatives of camphor." By E. M. RICHARDS.

"The synthesis of an azocyanine." By F. M. HAMER.

"Chromammine salts of the nitro-dyes and of other colouring matters." By H. J. S. KING.

CERTIFICATES OF CANDIDATES FOR ELECTION AT THE BALLOT TO BE HELD AT THE ORDINARY SCIENTIFIC MEETING ON THURSDAY, MAY 1ST, 1924.

N.B.—The names of those who sign from "General Knowledge" are printed in *italics*.

BAKHSH, ALLAH, M.A., B.Sc., Muslim University, Aligarh, India. British Indian. Reader in Chemistry and Chairman of the Department of Studies in Chemistry, Muslim University, Aligarh, India. Took B.Sc. degree of the Allahabad University in 1904, and M.A. degree in Chemistry of the same University in 1906. Worked as an Assistant Professor of Chemistry in the late M.A.O. College, Aligarh, from October 1908, till 30th November, 1920, when the said College was raised to the status of a University under the title of Muslim University, Aligarh, by Act XL of 1920 of the Government of British India, and from 1st December, 1920 I have been appointed a Reader in Chemistry of the Muslim University, Aligarh, and was elected Chairman of the Department of Studies in Chemistry in 1921. Thus I have been engaged in teaching for the last 15 years. (*Signed by*) Qasim Ali Mansuri, Hans Krall, N. R. Dhar.

BANERJEE, PROFULLA KUMAR, 37/1 Kasimitter's Ghat Street, Calcutta, India. Bengalee. Managing Proprietor of the East India Chemical Works Co., Barnagore (Bengal), India. Engaged in manufacturing pharmaceutical and technical chemicals since 1911. In charge of the factory of the East India Chemical Works, Barnagore, near Calcutta, for seven years. Managing Proprietor of the East India Chemical Works since 1922. Desirous of joining

the Chemical Society as a Fellow with the object of keeping in touch with the advancement of Chemistry. (*Signed by*) Anu Ghose, T. K. Ghose, B. N. Maitra, K. B. Sen.

BARNETT, JOHN, 111, Kingsley Avenue, West Ealing, W. 13. British. Student for 3 years at the East London College (University of London). Passed A.I.C. exam. in General Chemistry, July, 1923. Passed B.Sc. (Lond.), 1st Class Honours Chemistry, 1923. (*Signed by*) A. T. Healey, W. G. Shilling, Eustace E. Turner, W. H. Patterson, J. R. Partington, Frank W. Bury.

BERE, CHARLES MONTAGUE, Cockhaynes, Silverton, near Exeter. British. Research Student. B.Sc. 1st Class Hons. in Chemistry (London) after the recognised course at King's College, 1922. Since then engaged in research in Organic Chemistry at King's College. (*Signed by*) Samuel Smiles, A. J. Allmand, H. W. Cremer.

BIRCHENOUGH, WILSON, 47, Petworth Road, Friern Barnet, London, N. 12. British. Science Master in a Central School. B.Sc. degree (London University) in Chemistry, Physics and Mathematics. Chief Analytical Chemist and Instructor in Steel Analysis at Eagle Works, Sheffield, for six years. Science Master in Woodhouse Central School, N. Finchley. (*Signed by*) T. A. Quilliam, G. M. Norman, F. S. Kipping.

BURGESS, MAURICE JOHN, 48, Sandford Grove Rd., Nether Edge, Sheffield. English. Research Chemist. Research on coal and gaseous inflammation under Mining Association and Home Office. Published jointly with Prof. R. V. Wheeler papers in the Journal of the Chemical Society on coal and gas researches. Engaged on research for Safety in Mines Research Board. (*Signed by*) R. V. Wheeler, H. F. Coward, F. V. Tideswell, W. Payman.

CHURCHILL, ERNEST GEORGE, 66, Victoria Avenue, East Ham, E. 6. British. Schoolmaster. M.Sc. (Sheffield), A.I.C. Student Demonstrator in Chemistry at the University of Sheffield, 1920–21. Demonstrator, Chemistry Dept., East Ham Technical College. (*Signed by*) W. H. Barker, W. T. Clough, E. D. Griffiths.

CRAMP, ALFRED CECIL, Palmer's School, Grays, Essex. English. Chemistry Master. (1) (1918–1920) Two years as student in Electrical Engineering Dept. (including Chemistry and Metallurgy) at City and Guilds Technical College, Finsbury. (2) (1920–1923) Three years at Palmer's School as Chemistry Master. (3) Studying for London University Degree in Chemistry. (*Signed by*) E. W. J. Neave, H. W. V. Player, G. Polglaze.

DYE, AUBREY WILSON, "Invertiel," Martin Road, Centennial Park, Sydney, N.S.W., Australia. English, born Aldershot, Hampshire, 1885. Metallurgist, Technological Chemist, etc. Business Address—c/o A. W. Dye Limited, 219, Elizabeth Street, Sydney, N.S.W., Australia. Managing Director, A. W. Dye Limited, Bullion Melters, Smelters, Refiners, Manufacturing Chemists, etc. Was for several years in charge of Assay Laboratory of Johnson & Sons, Smelting Works, Limited, later in charge of Laboratory of Harrington's Limited, photographic merchants of Sydney, N.S.W.; since 1914 established and practising on own account. Appointed Assay Master in New South Wales for the Hall Marking of Jewellery. Lecturer on Photographic Chemistry, Dental Metallurgy, etc. (*Signed by*) Edgar A. Rayner, Arthur J. Chapman, Alex. W. Bain.

EDWARDS, WILFRID HENRY, Mauritius. British. Scientific Assistant at the Department of Agriculture of Mauritius. Now on special leave as research student in Entomology at the Imperial College. Laureate of the College of Agriculture of Mauritius, at which I obtained the Diploma in Agricultural Chemistry. Did research in sugar house chemistry and pub-

lished a paper on the exhaustion of sugar from molasses in the "Journal Agricole" (Mauritius). (*Signed by*) James C. Philip, J. W. Hinchley, H. B. Baker.

ETRIDGE, JOSEPH JOHN, 24, Lynmouth Rd., Stamford Hill, N. 16. British. Chemist. B.Sc., London, 2nd Hons. Chemistry, 1922. Assistant chemist to Messrs. W. J. Bush & Co. (1918–22). Chemist to Messrs. J. Manger & Sons (1923–). (*Signed by*) George Senter, Samuel Sugden, Wm. W. Myddleton.

EWART, FREDERICK KENNETH, Exeter College, Oxford. British by birth. Student. Science Scholar (Open), Exeter College, June, 1920. B.A. (Chemistry, Pt. I), July, 1923. President, Oxford University Junior Scientific Club, 1923. At present researching in the Balliol and Trinity Laboratory. (*Signed by*) H. R. Raikes, John Rankin, E. N. Allott, H. Hartley, C. N. Hinshelwood, E. J. Bowen.

FIRTH, HERBERT, Poplar Cottage, Scholes, Cleckheaton, Yorks. British. Student, Bradford Technical College. Registered Student, Institute of Chemistry, in last year of training. Engaged on research. Had 5 years' experience as assistant to Analytical Chemist. Reasons for desiring membership, (1) use of the Library, (2) to keep up to date with advances in the Science. (*Signed by*) T. W. Price, Robt. D. Abell, Barker North.

GILLMAN, PERCY, B.Sc. (Vict. Univ. of Manchester), Oakmount School, Arnside, Westmorland. British. Schoolmaster and Science Master. Principal of Oakmount Boarding School, Arnside, Westmorland. 4½ Years Senior Science Master, Royal Grammar School, Lancaster (organised the science work for boys taking O. and C. Higher Certif. Exams. and University Entrance Scholarships). 11 Years in charge of Science Laboratory, Technical School, Storey Institute, Lancaster. At present having charge of Chemistry Classes of recognised (1) Pharmaceutical Course, at Technical School, Lancaster, (2) Chemical Trades Courses, at Technical School, Lancaster. (*Signed by*) G. Walker, E. H. Holden, William French.

GINDI, FOAD MIKHAIL, Cairo, Egypt. Egyptian. University Student. Agricultural Chemist, Ministry of Agriculture, Egypt. Passed the final B.Sc. taking Chemistry as principal subject in Birmingham University in June 1923, and working for the B.Sc. Honours in Biochemistry. (*Signed by*) Arthur R. Ling, G. T. Morgan, E. Ashley Cooper.

HAGUES, GEORGE, 54, White St., Hull. British. Analytical Chemist. B.Sc. (Leeds) Hons. Chemistry. A.I.C. (*Signed by*) John Stanley Carter, Edward Johnson Wayne, Edgar Rhodes.

HAMNETT, THOMAS HENRY, 1, Belmont Rd., Clapham, S.W. 4. British. Chemist. (i) Studied Chemistry under my father, T. Hamnett, Chemist, for many years. (ii) Studied Chemistry, Physics, Botany, and Pharmacy under H. Wootton, B.Sc., and Chas. Gosling, Ph.C., at the London College of Chemistry, Clapham Rd., where I passed out with First Class Certificates in each of the specified subjects, including Practical and Theoretical, Organic and Inorganic Chemistry. A considerable period was spent in Qualitative and Quantitative Analysis, Alkaloidal Assays, etc. (iii) Manager for A. H. Wardle, Ph.C., for an extensive period. (iv) Manager for Heppells, Chemists, at the following branches—164, Piccadilly, 26, Piccadilly, 9, Bloomsbury Street. At the present time my position is Manager of Heppells, Chemists, 35, Haymarket. (*Signed by*) Frank Radcliffe, Thos. R. Owles, S. Gray Fenton.

HARRY, HUBERT TEARE, Northleigh, Tywardreath, Par Station, Cornwall. British. Member of the Teaching Profession (Science Master). Com-

pleted a 3 years' course of study in the Faculty of Science at Bristol University. B.Sc. (pass) obtained in June, 1923. (Chemistry taken as a final subject in this examination.) As a Science Master, I am desirous of keeping in touch with modern developments in Chemistry. (*Signed by*) F. Francis, J. W. McBain, M. E. Laing.

HODGES, FRANCIS WILLIAM, 30, Forest Rd., Kew, Surrey. English. Science Master at the Cooper's Co. School, Bow, E. B.Sc., London University. Teacher of Chemistry since 1899. Part author of "Chemistry and Physics for Indian Students" and "Chemistry and Physics for Middle Forms," Gregory, Simmonds, and Hodges. Research student, London University. (*Signed by*) Francis Arnall, Frank Matthews, J. C. Crocker.

HOGG, JOHN ALEXANDER, Burston House, Pittville Circus, Cheltenham. British. Pharmaceutical Chemist. Chief Chemist to United Chemists Association, Ltd. Formerly Works Manager to Lysol Ltd., Raynes Park. For many years Works Chemist with Messrs. Burroughs, Wellcome & Co., Boots Pure Drug Co., Ltd., etc. (*Signed by*) H. G. Tribley, H. C. Sayer, F. Stanley Clarke.

HORTON, HAROLD VIVIAN, 9, Brambledown Road, Wallington, Surrey. British. Chemist. Government Laboratory (from Feb. 25th, 1924). University College, London, Jan. 1919–Sept. 1923. B.Sc., 2nd Class Hons., Chemistry, 1921. A.I.C., Feb. 1922. Dec. 1921–Sept. 1923, Research at University College in Organic Chemistry. (*Signed by*) H. J. Evans, Henry Terrey, J. N. E. Day.

HUMPLEBY, JOHN WILLIAM, 6, Leader Williams Rd., Irlam, Manchester. British. Chief Chemist and Chief Assistant to the Coke Ovens Manager. 8 Years as junior assistant in the laboratory of the Coal Distillation Co.'s Coke Ovens and By-product Plant at Port Clarence, co. Durham, under J. A. Roelofsen, Ph.D.; 4½ years manager of the Crude Benzol Recovery and Rectification Plant at Clay Cross, nr. Chesterfield; 2 years manager of the By-product Plant at Port Clarence; 5 years as Chief Chemist and Assistant Manager at the Coke Oven and By-product Plant of the Portington Steel and Iron Co., Ltd., Irlam, Manchester. (*Signed by*) J. J. Morgan, E. Bayley, Frank B. Small.

INNES, JOHN, c/o Gray, 1, Trinity Street, Hawick. British. Science Master. B.Sc. (Edin.) in Chemistry. Teacher of Textile Science in Hawick Technical Institute, for students in the dyeing, etc., branches of industrial chemistry. It is desired to keep in touch with current chemical literature. (*Signed by*) James Walker, J. A. McKerrow, Sydney A. Kay, Arthur A. Hoskings.

JENKIN, DUDLEY, 9, Fenchurch St., E.C. 3. British. Staff of large importers and distributors of American Lubricating Oils (Scientific Dept.). Scientific Education at Merchant Taylors and Mercers Schools, London. Detailed study of Hydrocarbon Oils in London, Paris, Brussels, and Zurich under well-known authorities. During the war experience in transport of crude oil by admiralty tankers in Trinidad oil fields. At present studying at Sir J. Cass Technical Institute (evening), and also occassionally deliver voluntary lectures on various chemical subjects. (*Signed by*) W. H. Simmons, F. H. Lowe, E. J. Lush.

KHANNA, RAM CHANDRA, B.Sc., Multan City, India. Aryan. Teacher in a School. Second Master, Khalsa A. V. School, Lyallpur City, India. Bachelor of Science, Punjab University. (*Signed by*) N. A. Yajnik, E. T. Dean, V. S. Puri.

KLEIN, LOUIS, 44, Downs Park Rd., Hackney, London, E. 8. British.

Student. University Scholarship in Chemistry, 1921. B.Sc. Hons. Chemistry, 1921. Teacher's Diploma, 1923. Research in Chemistry at University College under Dr. O. L. Brady, 1921–22, 1923–24. (*Signed by*) O. L. Brady, J. N. Collie, J. N. E. Day.

LANDON, JESSIE MARY I., 59, Tressillian Road, St. John's, S.E. 4. British. Science Mistress, High School, Sleaford, Lincs. B.Sc. London University. Advanced Course in Chemistry at the Royal College of Science, South Kensington. Intermediate Exam. of the Institute of Chemistry. Fellow of the Royal Horticultural Society. (*Signed by*) William A. Tilden, Alfred Smetham, James C. Philip.

LAURIE, JAMES PICKETT, 8, Lea Bridge Rd., Clapton, E. 5. British. Assistant Chemist. Three and a half years assistant chemist to Messrs. Baird and Tatlock (Ldn.), Ltd. Six months Second Chemist Colne Valley Water Co., Watford. At present Second Assistant in Science School, Winchester College. (*Signed by*) B. Adams, L. R. B. Pearce, J. A. Williamson, F. W. Goddard.

MCKIE, DOUGLAS, 23, North Avenue, Tredegar, Monmouthshire; London address, 59, Dartmouth Park Hill, N.W. 5. British. Research Student in Chemistry at University College, London. 1920–1923, Student in Honours Chemistry Course at University College, London. 1923 (Oct.) B.Sc. University of London. 1st Class Honours in Chemistry. 1923 (Oct.) to date, Research student at University College, London. (*Signed by*) J. N. Collie, F. G. Donnan, Irvine Masson.

MALSBURY, JOSEPH, 6, Gordon Rd., Weston-s.-Mare. British. Works Chemist. *Training.*—8 Years at Weston-s.-Mare School of Science and Art under E. T. H. Bucknell, Esq., F.C.S. *Examination.*—Inter. B.Sc. (London) in Chemistry, Mechanics, Physics, Maths. Now working for B.Sc. (Honours) in Chemistry (London). *Works Experience.*—With Weston-s.-Mare Gaslight Co., April 1918–Nov. 1919, Assistant Chemist, Nov. 1919 to date, Works Chemist. (*Signed by*) E. T. H. Bucknell, L. W. Raymond, Jos. Harger Pye.

MAXTED, GODFREY VINCENT JOHN, Elloughton, Brough, East Yorkshire. British. Of the firm of Consulting Engineers, Maxted & Knott, Ltd., Hull and London, which deals chiefly in the Cement Industry. B.A. Cantab. (*Signed by*) F. C. Ray, A. J. Berry, J. C. Mellersh, D. B. Butler, Geo. H. Appleyard, Frank S. Wood, Wm. H. Woodcock.

MORRISON, EDITH, 27, Lilley Road, Fairfield, Liverpool. British. Student. 1st Class Hons., B.Sc., Chemistry, Liverpool, 1922. (*Signed by*) E. C. C. Baly, I. M. Heilbron, W. C. M. Lewis.

MUKERJEE, BINAY CHANDRA, Jamshedpur, India. Bengalee, Hindu. Chief Chemist, Office of the Metallurgical Inspector, Jamshedpur, India. Master of Science (Chemistry), Calcutta University. (1) Formerly Assistant Chemist, The Central Provinces Prospecting Syndicate, Ltd.; Senior Chemist, Rangoon Pharmaceutical and Chemical Works, Rangoon; Assistant Chemist, Government Technical Laboratory, Dept. of Industries, United Provinces. (2) Joint author of "Rose Otto from Rose Flower (*Rosa Damascena*) of the United Provinces," published in the Journal of Indian Industries and Labour, February 1922, Vol. II, Part I; also worked on "Investigation of Teak Dye from Teak Leaves" (Bulletin of Indian Industries and Labour, No. 13). (3) Now Chief Chemist, office of the Metallurgical Inspector, Jamshedpur. (*Signed by*) J. N. Mukherjee, S. N. Sen, K. G. Naik.

ODAMS, RONALD CHARLES, 28, Milton Road, Cambridge. British. Assistant Chemist. 1st Class Honours in Chemistry, Part II, Nat. Sci. Tripos, Cambridge University, 1921. Engaged in research work in Organic

Chemistry at the above University for the last two years and at present with the Asiatic Petroleum Company. (*Signed by*) W. J. Pope, W. H. Mills, G. N. Nicklin.

PHILLIPS, FRANK BERTRAM, 64, Airedale Avenue, Chiswick, W. 4. British. Student. Graduate of University of London, 1st Class Honours in Chemistry. Desirous of receiving Journal and attending lectures, etc. (*Signed by*) Samuel Sugden, Ernest Augustus Doncaster, Robert Ernest Machin, George Senter.

PRITCHETT, ERIC GEORGE KEMP, 5, Willows Crescent, Cannon Hill, Birmingham. British. Analytical Chemist. Intermediate B.Sc. (London), 1923. 5½ Years works laboratory experience. (*Signed by*) W. A. S. Calder, John G. Clarke, Archibald O. Jones.

RANDALL, FREDERICK CHARLES, 10, Beauchamp Avenue, Leamington Spa. British. Temporary Assistant Chemist, Government Laboratory. M.Sc. Lond., A.I.C. Two years' research work at University College, London, after degree course. (*Signed by*) J. J. Fox, W. E. Garner, Allan E. Mitchell.

ROBERTS, ARCHIBALD LEWIS, 4, Victoria Street, Shrewsbury. British. Works Chemist, "Sentinel" Waggon Works, Ltd., Shrewsbury. Teacher of Chemistry, Borough Technical School, Shrewsbury, since 1916. It is desired to make use of the C.S. Library, also for research in Ferrous and Non-ferrous Analysis. (*Signed by*) Thos. P. Blunt, Herbert Henstock, D. C. Jones, *W. H. Perdlebury.*

ROBERTS, THOMAS, 17, Earle St., Wrexham. British. Metallurgical Chemist and Metallographist to Messrs. The Brymbo Steel Co., Ltd., Wrexham. 15 Years Assistant Chemist. 5 Years Chief Chemist and Metallographist. (*Signed by*) E. Escott Wood, H. Procter Smith, C. W. Mobberley.

SEAL, RALPH JOHN, 14, Woodend, Sutton, Surrey. British. Lecturer, Finsbury Technical College. 1921–1923, Research Chemist, Brentford Gas Coy. Associate of the City and Guilds of London Inst., Finsbury College. A.I.C., B.Sc. (London). (*Signed by*) H. M. Atkinson, A. J. Hale, J. E. B. Price.

SMITH, IAN CHARLES PARK, 6, Dermody Gardens, Lewisham, S.E. 13. British. Laboratory Assistant in the Manufacture of Organic Chemicals at the British Drug Houses. Part-time student at Birkbeck College, reading for the B.Sc. Exam., Hons. Chemistry. (*Signed by*) Francis H. Carr, Samuel Sugden, George Senter.

SOBTI, BODH RAJ, M.Sc., Gujerat (Punjab), India. Indian. Research Chemist, Scindia Chemical Laboratories, Gwalior State (India). (*a*) M.Sc. of the Punjab University; (*b*) Working in the Scindia Chemical Laboratories as Research Chemist for about three years; (*c*) Papers contributed: (1) Perfumery and Essential Oil Record, Nov. 20, 1923, "Phenols in Ajowen Oil"; (2) The Journal of the American Chemical Society, Dec. 1923, "The Molecular Conductivity of Potassium Iodide in Epichlorohydrin." (*Signed by*) N. A. Yajnik, Edwin Theodore Dean, V. S. Puri.

SWAIN, CHARLES MANSFIELD, 6, High Street, Langley, Birmingham. British. Analytical Chemist. Higher Board of Education (Chemistry), 1918. London University Matriculation, 1923. 9 Years' works laboratory experience. (*Signed by*) W. A. S. Calder, John G. Clarke, Archibald O. Jones.

WATKINS, WILLIAM JOHN, 49, Hazelwood Rd., Northampton. British. Head Brewer, Northampton Brewery Co., Ltd., Bridge St., Northampton. I desire admission to the Chemical Society so that I may keep in close touch with the advances in Chemistry, both General and Analytical, and Bacteriology.

Two years' training in chemistry under Mr. Frank Faulkner, The Laboratory, Bath Row, Birmingham. (*Signed by*) Horace T. Brown, Harold Heron, Henry F. Everard Hulton.

WILLIAMS, JOSEPH HUGHES, B.Sc. (Lond.), 31, Salt Avenue, Stafford. British. Works Chemist to the English Electric Co., Ltd., Siemens Works, Stafford. Assistant Chemist to Messrs. E. Riley & Harbord, London, till 1914. Assistant Chemist, Scientific and Technical Research Dept., Imperial Institute, S. Kensington, London (1915–1918). Works Chemist to Siemens Bros. Dynamo Works, now The English Electric Co., Siemens Works, Stafford (1918 to date). Lecturer in Organic Chemistry, Wolverhampton Technical School (1920 to date). (*Signed by*) T. A. Henry, Thos. J. Murray, J. H. Wood.

WINDLE, FRANK BERESFORD, 16, Perryn Rd., Acton, W. 3. British. Research Assistant to Chemical Warfare Committee. 4 Years' experience as assistant in the Analytical Lab. of Messrs. Wright, Layman & Umney, Ltd., Wholesale Chemists. Assistant to Prof. C. S. Gibson, O.B.E., M.A., Chemical Dept., Guy's Hospital Medical School. Studying for Hons. B.Sc. at Birkbeck College, University of London. (*Signed by*) Charles S. Gibson, G. M. Bennett, H. C. Bell, H. Burton.

WOODROW, WALTER AMBROSE, 8, Berkeley Road, Manor Park, E. 12. English. Chemist in Charge. Am at present in charge of Laboratory of Anglo-American Oil Co., Ltd., 36, Queen Anne's Gate, Westminster. Member of Standardization Committee of Petroleum Technologists. Member of the Institute of Petroleum Technologists. Student of Pure Chemistry (pre-war and post-war) at East Ham Technical Institute. (*Signed by*) A. E. Dunstan, F. B. Thole, F. G. P. Remfry, S. J. M. Auld.

YOUNG, GEORGE WATSON, 97, Stockton Road, West Hartlepool. British. Chief Chemistry Master, West H'pool Secondary School. B.Sc. Durham (Chemistry chief subject), 1913. Certificated and Registered Teacher. Chemistry master at above school, 1916 to present time except for break, July 1918–Easter 1919 (Army Education Scheme in France), Easter 1919–to July 1920 (Science Master, Queen Elizabeth Grammar School, Yarm, Yorks). (*Signed by*) D. Arthur Ruell, Birkett Wylam, J. A. Smythe.

The following Certificates have been authorised by the Council for presentation to ballot under Bye-Law I (2).

BUTLER, FREDERICK WILLIAM WEBB, 8, Forest Rd., Bulwer Park, Durban, Natal, S.A. British. Works Chemist. Messrs. The Natal Soap Works, Durban. National Technical Certificate (distinction), Union Dept. of Education. National Advanced Certificate (distinction), Union Dept of Education. 4 Years student at the Natal Technical College, latterly as a part-time student. 3 Years Chemist at The Natal Soap Works, Ltd. I wish to keep in touch with recent advances of Pure Chemistry. (*Signed by*) E. Halm, C. D. Golding, *James Moir*.

KON, STANISŁAW KAZIMIERZ, ul. Piekna 41 m. 6, Warsaw, Poland. Polish. Research Chemist. Ph.D. (Warsaw University), 1923. Has published a paper (jointly with Jablczynski) on the "Accurate Determination of Boiling-point Elevation" (Trans., 1923, November). (*Signed by*) G. A. R. Kon.

PAUL, PRAMATHA NATH, Ramtek P.O., C.P., India. Bengalee, Indian. Assistant Chemist to the C.P. Prospecting Syndicate, Ltd. B.Sc. of the Calcutta University (India), knows manufacturing of Sulphuric Acid, the operation of the Recovery Coking Plant, the Technical Analysis of Metals, Alloys, Ores, Minerals, Waters, Gases, Foods, etc. (*Signed by*) K. G. Naik, A. C. Bose, *M. J. Gajjar*.

ADDITIONS TO THE LIBRARY.

I. *Donations.*

ACTUALITÉS DE CHIMIE CONTEMPORAINE. Publiées sous la direction de A. HALLER. 2nd series. Paris 1924. pp. viii + 310. ill. 12 *fr.* net. (*Recd.* 27/2/24.)
From the Publisher : M. Gaston Doin.

CHINA CLAY TRADE REVIEW : the official organ of the china clay industry. London 1923 +. [Supplement to *The Chemical Age.*]
From the Publishers : Messrs. Benn Brothers.

EASTMAN KODAK COMPANY. Abridged scientific publications from the Research Laboratory. Vol. VI, 1922. Rochester, N.Y., 1923. pp. 238 + viii. ill. (*Reference.*)
From the Eastman Kodak Company.

INSTITUTION OF MECHANICAL ENGINEERS. Proceedings. 1924, etc., London 1924 +. (*Reference.*) From the Institution.

LUNGE, GEORGE, and KEANE, CHARLES ALEXANDER. Technical methods of chemical analysis. 2nd edition. Edited by CHARLES ALEXANDER KEANE and PERCY CYRIL LESLEY THORNE. Vol. I. London 1924. pp. xx + 702. ill. (*Reference.*) 63*s.* net.
From the Publishers : Messrs. Gurney & Jackson.

II. *By Purchase.*

AMERICAN CERAMIC SOCIETY. Bulletin : a monthly publication devoted to Proceedings of the Society, discussions of plant problems, discussions of technical and scientific questions and promotion of coöperative research. Vol. I, etc. Easton, Pa., 1922 +. (*Reference.*)

—— Ceramic Abstracts. Vol. I, etc. Easton, Pa., 1922 +. (*Reference.*)

BORNEMANN, F. Kohlensäure und Pflanzenwachstum. 2nd edition. Berlin 1923. pp. 138. ill. (*Recd.* 4/2/24).

CHEMIE EN INDUSTRIE : Bijblad van het Chemisch Weekblad. Year I, etc. Amsterdam 1923 +. (*Reference.*)

CONGRÈS INTERNATIONAL DES COMBUSTIBLES LIQUIDES. Compte rendu, etc. Paris 1923. pp. 851. ill. (*Reference.*)

EDEL-ERDEN UND -ERZE. Zeitschrift für das Gesamtgebiet der seltenen Erden und Erze, für die Industrie ihrer Gewinnung, Verarbeitung, und Verwertung. Year I, etc. München 1919 +. (*Reference.*)

EWALD, P. P. Kristalle und Röntgenstrahlen. Berlin 1923. pp. x + 328. ill. (*Recd.* 11/2/24.)

FEULGEN, R. Chemie und Physiologie der Nukleinstoffe nebst Einführung in die Chemie der Purinkörper. Mit einem Sonderkapitel "Die Pathologie des Purinstoffwechsels" von FRIEDA FEULGEN-BRAUNS. (Biochemie in Einzeldarstellungen. V). Berlin 1923. pp. xii + 432. ill. (*Recd.* 27/2/24.)

FRIEND, JOHN NEWTON. [Editor.] A text-book of inorganic chemistry. Vol. II. The alkali-metals and their congeners. By ANDREW JAMIESON WALKER. London 1924. pp. xxvi + 380. ill. (*Reference.*) 20*s.* net.

—— —— Vol. VII. Part i. Oxygen. By JOHN NEWTON FRIEND and DOUGLAS FRANK TWISS. London 1924. pp. xxvi + 370. ill. (*Reference.*) 18*s.* net.

GRUBE, GEORG. Grundzüge der angewandten Elektrochemie. Vol. I. Dresden 1922. pp. xii + 268. ill. (*Recd.* 21/1/24.)

HOLMES, HARRY N. Bibliography of colloid chemistry. Preliminary edition. Washington 1923. pp. iii + 135. (*Reference.*) 7*s.* 6*d.* net.

KRAUSE, HUGO. Das Aluminium und seine Legierungen. 2nd edition. 2 vols. Wien 1923. pp. viii + 236, viii + 228. ill. (*Recd.* 21/1/24.)

KRÜGER, PAUL. Untersuchungsmethoden für die Textil-Industrie. Vol. I. Berlin 1923. pp. vi + 172. ill. (*Recd.* 25/1/24.)

LASSAR-COHN. Arbeitsmethoden für organisch-chemische Laboratorien. 5th edition. Spezieller Teil. Leipzig 1923. pp. xiv + 1144. (*Reference.*)

LIESEGANG, RAPHAEL ED. Kolloide in der Technik. Dresden 1923. pp. viii + 157. (*Recd.* 6/2/24.)

LYON, T. LYTTLETON, FIPPIN, ELMER O., and BUCKMAN, HARRY O. Soils, their properties and management. New York [1915, reprinted 1923]. pp. xxii + 764. ill. 18*s.* 6*d.* net. (*Recd.* 22/1/24.)

MERCK, [CARL] EMANUEL. Prüfung der chemischen Reagenzien auf Reinheit. 3rd edition. Darmstadt 1922. pp. iv + 378. (*Recd.* 25/1/24.)

MÜLLER, ERICH. Das Eisen und seine Verbindungen: eine Monographie auf physikalisch-chemischer Grundlage. Mit einem Abschnitt über "Die Legierungen des Eisens," von GEORG GRUBE. Dresden 1917. pp. viii + 558. ill. (*Recd.* 21/1/24.)

OSTWALD, WILHELM. Farbkunde. Leipzig 1923. pp. xvi + 314. ill. (*Recd.* 20/2/24.)

PREGL, FRITZ. Die quantitative organische Mikroanalyse. 2nd edition. Berlin 1923. pp. viii + 218. ill. (*Recd.* 8/2/24.)

SCHOENFLIES, ARTUR. Theorie der Kristallstruktur: ein Lehrbuch. Berlin 1923. pp. xii + 556. ill. (*Recd.* 25/1/24.)

SCHULTZ, GUSTAV. Farbstofftabellen. 6th edition. Vol. II. Edited by GUSTAV SCHULTZ and LUDWIG LEHMANN. Berlin 1923. pp. viii + 290. (*Reference.*)

SLOSSON, EDWIN EMERY. Creative chemistry: descriptive of recent achievements in the chemical industries. London 1921. pp. xvi + 312. ill. 7*s.* 6*d.* net. (*Recd.* 18/1/24.)

TRILLICH, HEINRICH. Das Deutsche Farbenbuch. Vol. I. München 1923. pp. vi + 136. ill. (*Recd.* 20/2/24.)

VALENTA, EDUARD. Photographische Chemie und Chemikalienkunde. 2nd edition. Part II. Organische Chemie. Halle (Saale) 1922. pp. xiv + [334]. (*Recd.* 21/1/24.)

VOGEL, J. H., [and others]. Das Acetylen: seine Eigenschaften, seine Herstellung und Verwendung. [Chem. Tech. in Einzeldarstellungen.] 2nd edition. Leipzig 1923. pp. xii + 424. ill. (*Recd.* 25/1/24.)

WALDEN, PAUL. Molekulargrössen von Elektrolyten in nichtwässerigen Losungsmitteln: zur Kenntnis der Polymerie, Assoziation und Autokomplexbildung von Salzen, Säuren und Basen. Dresden 1923. pp. xii + 350. (*Recd.* 20/2/24.)

WERNER, ALFRED. Neuere Anschauungen auf dem Gebiete der anorganischen Chemie. 5th edition. By PAUL PFEIFFER. Braunschweig 1923. pp. xiv + 444. (*Recd.* 20/2/24.)

III. *Pamphlets.*

AUSTRALIA, COMMONWEALTH OF. *Department of Defence.* Munitions Supply Board. Technical reports 1921—1922. Melbourne 1922. pp. 34. ill.

—— —— The source and influence of impurities in 80 : 20 cupronickel. By CLEMENT BLAZEY. Melbourne 1922. pp. 56. ill.

BOHR, NIELS. On the application of the quantum theory to atomic structure. Part I. The fundamental postulates of the quantum theory. (Translated from the *Z. Physik*, 1923, **13**, by L. F. CURTISS.)

MARTIN, GEOFFREY, and COOPER, WALTER JOHNSON. The exothermic reaction of Portland cement clinker formation. (British Portland Cement Research Assoc. Pamphlet No. 3.) London 1923. pp. 63. ill.

MIHOLIĆ, STANKO S. Chemical analysis of the mineral water of Lipik. (A summary of the paper published in "*Rad*" 1923, **228**.)

MOIR, JAMES. Colour and chemical constitution. Part XVIII.

Colourless substances in H_2SO_4 (halochromy). (From the *Trans. Roy. Soc. S. Africa*, 1923, **11**.)

SCIENTIFIC AND INDUSTRIAL RESEARCH, Department of. *Food Investigation Board.* Special Report No. 16. Canned fruit. By WILLIAM GEORGE SAVAGE and RODERICK FRANCIS HUNWICKE. London 1923. pp. iv + 34.

—— —— *Fuel Research Board.* Technical Paper No. 8. The steaming of Wigan Arley coal in vertical gas retorts. London 1923. pp. iv + 18. ill.

—— —— Physical and chemical survey of the national coal resources, No. 2. Interim report on methods of analysis of coal. London 1923. pp. vi + 28. ill.

SIMONSEN, JOHN LIONEL. The constituents of some Indian essential oils. Parts XI and XII. (From the *Indian Forest Records*, 1923, **10**.)

SMITH, EDITH PHILIP. Comparative studies on respiration. XXII. The effect of lactic acid on the respiration of wheat. (From the *Amer. J. Bot.*, 1922, **9**.)

UNITED STATES. *Department of Agriculture.* Department Bulletin No. 1194. A chemical and structural study of mesquite, carob, and honey locust beans. By G. P. WALTON. Washington 1923. pp. 19. ill.

—— —— Department Bulletin No. 1203. Experimental production of straw gas. By HARRY E. ROETHE. Washington 1923. pp. 10. ill.

VOEGTLIN, CARL, DYER, HELEN A., and LEONARD, CLIFFORD SHATTUCK. The mechanism of the action of arsenic upon protoplasm. (From the *U.S. Public Health Reports* 1923, **38**.)

TECHNOLOGY DEPT.

PUBLIC LIBRARY
MAY 16 1924
DETROIT.

PROCEEDINGS

OF THE

CHEMICAL SOCIETY.

An Informal Dinner of the Chemical Society was held at the Hotel Cecil, Strand, on the 27th March, 1924, at 7 for 7.30 p.m., Professor W. P. WYNNE, D.Sc., F.R.S., President, in the Chair. Fellows and their guests were present to the number of 251.

The following toasts were honoured:

"The Loyal Toasts," by the PRESIDENT.

"The Chemical Society, coupled with the name of the President," by Mr. H. J. EVANS, B.Sc., A.I.C.

"The Retiring Secretary, Professor J. C. Philip, O.B.E., F.R.S.," by Professor G. T. MORGAN, O.B.E., F.R.S.

"The Longstaff Medallist for 1924, Professor F. G. Donnan, C.B.E., F.R.S.," by Professor E. C. C. BALY, C.B.E., F.R.S.

Miss Megan Foster sang during the evening, and other musical contributions were made by Mr. L. J. Burrage, Dr. E. C. Edgar, and Professor J. C. Philip.

Ordinary Scientific Meeting, Thursday, April 3rd, 1924, at 8 p.m., Professor W. P. WYNNE, D.Sc., F.R.S., President, in the Chair.

The PRESIDENT referred to the loss sustained by the Society, through death, of the following Fellows:

	Elected.	Died.
John Cooke Hewlett.....	Feb. 18th, 1892.	March 28th.
Edward Partington	Feb. 16th, 1911.	March 2nd.

It was announced

1. That Professor Irvine Masson had resigned from the position of Senior Secretary on the occasion of his leaving London, and that the Council had passed the following resolution:

> "In regretfully accepting the resignation of Dr. Irvine Masson from the office of Secretary, the Council desires to put on record its sense of the zeal and ability he has shown in the conduct of the Society's affairs. In connexion more especially with the publication side of the Society's activities

Dr. Masson's scientific capacity and literary sense have been of the utmost service, and the Council regrets the loss of such a capable and zealous colleague."

2. That Dr. T. Slater Price had been appointed as Senior Secretary until the next Annual General Meeting, in accordance with Bye-Law V.

3. That the resignation of Professor J. M. Thomson as Chairman of the Library Committee had been accepted and that the Council had passed the following resolution:

"The Council desires to place on record its great appreciation of the high services which have been rendered to the Society by Professor J. M. Thomson in his capacity of Chairman of the Library Committee. To his direction of the policy of the Committee is very largely due the value of the Library to chemists in this country, on whose behalf the Council now presents to Professor Thomson its most cordial thanks."

4. That Professor J. R. Partington had been appointed Chairman of the Library Committee.

5. That in view of the fact that the financial position of the Society is under consideration, the Treasurer is authorised by the Council not to accept Life Composition Fees at the present rate.

6. That the following Committees for 1924–1925 had been appointed by the Council:

Finance Committee.—J. L. Baker, A. Chaston Chapman, F. P. Dunn, C. A. Hill, G. T. Moody, R. H. Pickard, and the Officers.

House Committee.—J. L. Baker, Sir Herbert Jackson, Alexander Scott, J. M. Thomson, Sir William A. Tilden, E. W. Voelcker, and the Officers.

Library Committee.—P. P. Bedson, O. L. Brady, J. R. Partington (*Chairman*), Sir Thomas K. Rose, Sir John Russell, Sir William A. Tilden, the Librarian, and the Officers, together with the following representatives of contributing Societies: J. L. Baker, C. Dorée, J. C. Drummond, A. Harden, J. P. Longstaff, R. L. Mond, and G. Senter.

Publication Committee.—E. C. C. Baly, O. L. Brady, J. J. Fox, W. N. Haworth, I. M. Heilbron, J. W. McBain, H. McCombie, I. Masson, W. H. Mills, T. S. Moore, J. R. Partington, J. C. Philip, R. H. Pickard, F. L. Pyman, N. V. Sidgwick, and the Officers.

Research Fund Committee.—H. B. Baker, E. C. C. Baly, Sir James J. Dobbie, F. G. Donnan, W. H. Mills, R. H. Pickard, R. Robinson, N. V. Sidgwick, S. Smiles, Sir James Walker, and the Officers.

Miss E. G. Turner was formally admitted a Fellow of the Chemical Society.

Certificates were read for the first time in favour of :

Thomas Leslie Garner, B.Sc., Wymeswold, Loughborough.
Louis Ivan Allan Mitcheli, M.Sc., University College, Gower Street, W.C. 1.
Ahmad Zaki, B.Sc., Chemistry Department, The University, Liverpool.

The following papers were read :

"The tautomerism of dyads. Part II. Acetylene and its halogen derivatives." By EDITH H. INGOLD (USHERWOOD).

"The potassium salts of phenolphthalein." By H. BASSETT and D. J. T. BAGNALL.

"The hydrolysis of potassium ferricyanide and potassium cobalticyanide by sulphuric acid." By H. BASSETT and A. S. CORBET.

"A phase rule study of the cupro-, argento-, auro-, and thallocyanides of potassium." By H. BASSETT and A. S. CORBET.

THE FARADAY LECTURE.

The Faraday Lecture, entitled "Atomism in Modern Physics," will be delivered by Professor R. A. Millikan, at the Royal Institution, Albemarle Street, W. 1., on Thursday, June 12th, 1924, at 8.30 p.m., instead of June 26th as previously announced.

RESEARCH FUND COMMITTEE.

A meeting of the Research Fund Committee will be held in June next. Applications for Grants, to be made on forms which can be obtained from the Assistant Secretary, Chemical Society, Burlington House, W. 1., must be received on or before Monday, June 2nd, 1924.

All persons who received grants in June, 1923, or in June of any previous year, whose accounts have not been declared closed by the Council, are reminded that reports must be returned by June 2nd.

List of papers, or Abstracts thereof, received between March 21st, and April 3rd, 1924. (This list does not include the titles of papers which have been read at a Scientific Meeting, or which have appeared in the Journal.)

"Investigations on the dependence of rotatory power on chemical constitution. Part XXI. Some compounds containing the secondary octyl radical linked to oxygen." By H. HUNTER.

"The correlation of additive reactions with tautomeric change. Part III. The cyano-imino-additive process." By E. H. INGOLD (USHERWOOD).

"Investigations on the supposed existence of copper-carbonyl." By E. MOND and C. HEBERLEIN.

"Dyes derived from phenanthraquinone. Part V. Phenanthraphenazinazines." By A. C. SIRCAR and P. C. DUTT.

"On the condensation of resorcinol and a few other aromatic hydroxy-compounds with some acids, esters, lactones, and lactams." By R. N. SEN and S. S. G. SIRCAR.

"An examination of the binary system sodium sulphite–water by extrapolation from the ternary system sulphite–sulphate–water." By A. C. D. RIVETT and N. B. LEWIS.

"Miscibility of anhydrous sulphite and sulphate of sodium." By N. B. LEWIS and A. C. D. RIVETT.

"Studies in the organic polysulphides. Part II. The action of anhydrous potassium pentasulphide on allyl iodide and on some aromatic halogen derivatives." By J. S. THOMAS and R. W. RIDING.

"Halogen-substituted aryl*iso*thiocyanates." By F. D. CHATTAWAY, R. K. HARDY, and H. G. WATTS.

"The hafnium content of zirconium ores. Part II." By G. HEVESY and V. T. JANTZEN.

"Quebrachamine." By E. FIELD.

"The orientating influence of the thiocyano-group in aromatic compounds." By F. CHALLENGER and A. D. COLLINS.

"The hafnium content of some historical zirconium preparations." By G. HEVESY and V. T. JANTZEN.

"Chemical affinity and the electronic structure of atoms." By B. H. WILSDON.

"The variation of the solubility of phosphates with hydrogen-ion concentration. Introduction and Part I. Phosphates of the alkaline-earth metals." By W. R. G. ATKINS.

"Catalytic racemisation of the diastereoisomeric *l*-menthylphenylbromoacetates." By A. MCKENZIE and I. A. SMITH.

"Physostigmine (eserine). Part II. The synthesis of physostigmol ethyl ether." By E. STEDMAN.

"Researches on residual affinity and co-ordination. Part XX. Chromic and cobaltic lakes of mordant azo-dyes." By G. T. MORGAN and J. D. M. SMITH.

"The electrometric titration of chromic acid using (*a*) the hydrogen electrode, and (*b*) the oxygen electrode." By H. T. S. BRITTON.

TECHNOLOGY DEPT.

PUBLIC LIBRARY
JUL 15 1924
DETROIT.

PROCEEDINGS

OF THE

CHEMICAL SOCIETY.

Ordinary Scientific Meeting, Thursday, May 1st, 1924, at 8 p.m., Professor W. P. WYNNE, D.Sc., F.R.S., President, in the Chair.

The PRESIDENT referred to the loss sustained by the Society, through death, of the following Fellows :

	Elected.	Died.
George Herbert Bailey	Dec. 16th, 1875.	April 18th, 1924.
William Love Biggart	June 19th, 1913.	March 15th, 1924.
Louis Charles Daniell	June 16th, 1887.	Dec. 15th, 1923.
John Frederick Davis	Dec. 17th, 1857.	Sept. 1923.
Alfred Lloyd	Feb. 19th, 1880.	April 10th, 1924.

Mr. H. J. S. King was formally admitted a Fellow of the Chemical Society.

Certificates were read for the first time in favour of :

Alexander Forbes, 564, Willoughby Road, Willoughby, Sydney, N.S.W.
Herbert John George, M.A., A.I.C., 22, St. John Street, Oxford.
Harold Higham, Broadmeadow House, Teignmouth.
James William Pardoe, Ivanhoe, Boundary Road, Wood Green, N. 22.
Madho Prasad, Professor, M.Sc., Meerut College, Meerut, U.P., India.
John Herbert Window Rumsey, Sunnybank, Knoll's Green, Knutsford.

Mrs. C. K. Ingold and Mr. J. D. Pratt were elected Scrutators, and a ballot for the election of Fellows was held, the following subsequently being declared elected as Fellows :

Allah Bakhsh, M.A., B.Sc.
Profulla Kumar Banerjee.
John Barnett, B.Sc., A.I.C.
Charles Montague Bere, B.Sc.
Wilson Birchenough, B.Sc.
Maurice John Burgess.
Frederick William Webb Butler.
Ernest George Churchill, M.Sc., A.I.C.
Alfred Cecil Cramp.
Aubrey Wilson Dye.
Wilfrid Henry Edwards.
Joseph John Etridge, B.Sc.
Frederick Kenneth Ewart, B.A.
Herbert Firth.
Percy Gillman, B.Sc.
Foad Mikhail Gindi, B.Sc.
George Hagues, B.Sc., A.I.C.
Thomas Henry Hamnett.
Hubert Teare Harry, B.Sc.
Francis William Hodges, B.Sc.
John Alexander Hogg.
Harold Vivian Horton, B.Sc., A.I.C.

John William Humpleby.
John Innes, B.Sc.
Dudley Jenkin.
Ram Chandra Khanna, B.Sc.
Louis Klein, B.Sc.
Stanislaw Kazimierz Kon, Ph.D.
Jessie Mary I. Landon, B.Sc.
James Pickett Laurie.
Douglas McKie, B.Sc.
Joseph Malsbury.
Godfrey Vincent John Maxted, B.A.
Edith Morrison, B.Sc.
Binay Chandra Mukerjee, M.Sc.
Ronald Charles Odams, B.A.
Pramatha Nath Paul, B.Sc.
Frank Bertram Phillips, B.Sc.
Eric George Kemp Pritchett.
Frederick Charles Randall, M.Sc., A.I.C.
Archibald Lewis Roberts.
Thomas Roberts.
Ralph John Seal, B.Sc., A.I.C.
Ian Charles Park Smith.
Bodh Raj Sobti, M.Sc.
Charles Mansfield Swain.
William John Watkins.
Joseph Hughes Williams, B.Sc.
Frank Beresford Windle.
Walter Ambrose Woodrow.
George Watson Young, B.Sc.

The following papers were read :

"The electrometric titration of chromic acid, using (*a*) the hydrogen electrode, and (*b*) the oxygen electrode." By H. T. S. Britton.

"Iminodihydro-1 : 2 : 3-triazole. Part II. Intra-annular migration of the dyad type and intra-nuclear tautomerism without migration." By H. W. Carnelley and P. K. Dutt.

"The formation of triphenylmethylphosphinic acid from triphenylmethoxyphosphorus dichloride." By D. R. Boyd and F. J. Smith.

"Investigations of the chromates of thorium and the rare earths. Part II. The chromates of lanthanum, praseodymium, neodymium, and samarium." By H. T. S. Britton.

Ordinary Scientific Meeting, Thursday, May 15th, 1924, at 8 p.m., Professor W. P. Wynne, D.Sc., F.R.S., President, in the Chair.

The President announced :

1. That the volume of "Chemical Reviews," recently issued by the American Chemical Society is offered to Fellows of the Chemical Society at the reduced price of $4.00, plus postage. This yearly volume will consist of about 500 pages, and will be published quarterly (in January, April, July, and October of each year). It will be devoted to articles of from about 20 to 50 pages embodying reviews or essays by specialists which might not consist essentially of results of their personal research.

Subscriptions should be sent to the Williams and Wilkins Co., Mount Royal and Guildford Avenues, Baltimore, Maryland.

2. That in view of the fact that the volume of the Annual Reports for 1923 (bound in cloth) was supplied without extra charge to Fellows who made application, the Council has decided

that the shillings received from Fellows for binding this volume shall be returned to those Fellows making application to the Assistant Secretary before the 31st October, 1924, and that the money in hand at that date shall be placed to the credit of the Publications Fund.

The following were formally admitted Fellows of the Chemical Society :—L. Klein and R. J. Seal.

Certificates were read for the first time in favour of :

Mark Gallagher, B.Sc., 2, Kingsgate Terrace, Hexham.
Mohammed A. Hamid, M.Sc., Baghhanpura, Lahore, India.
James Arthur Durham Hickson, B.Sc., 20, Ellerdale Road, Hampstead, N.W. 3.
Purushottam Dás Kapur, B.Sc., 2, Hayburn Crescent, Glasgow.
Percival Charles Leggeter, M.C., B.A., Glencot, Hatherley Road, Gloucester.
Gustaf Jim Östling, Ph.D., The University, Helsingfors, Finland.
Ralph Victor Webb, 15, Ridley Road, Harlesden, N.W. 10.
Rhys Williams, Dolfor, Wern Road, Skewen, Neath.

The following Certificates have been authorised by the Council for presentation to ballot under Bye-Law I (2) :

Ludvig Johannes Lindeman, Royal University of Agriculture, Aas, Norway.
Lee Irvin Smith, M.A., Ph.D., Campus Club, 112, Church Street S.E., Minneapolis, U.S.A.

The following papers were read :

" The bromo-derivatives of 1-methylglyoxaline and the constitution of ' chloroxalmethylin.' " By I. E. Balaban and F. L. Pyman.

" Synthesis of amygdalin." By R. Campbell and W. N. Haworth.

" Reactivity and radiation. The photochemical union of hydrogen and sulphur." By R. G. W. Norrish and E. K. Rideal.

FARADAY LECTURE.

The Faraday Lecture, entitled " Atomism in Modern Physics," will be delivered by Professor R. A. Millikan, on Thursday, June 12th, 1924, at 5.30 p.m. The Lecture will be given, by the kind permission of the Managers, in the theatre of the Royal Institution, Albemarle Street, W. 1.

Admission will be by ticket only. Each Fellow of the Society is entitled to two tickets, which may be obtained on application to the Assistant Secretary, The Chemical Society, Burlington House, W. 1.

LIST OF FELLOWS.

It has been decided, for reasons of economy, that the List of Fellows shall not be published this year.

List of papers, or Abstracts thereof, received between April 4th and May 15th, 1924. (This list does not include the titles of papers which have been read at a Scientific Meeting, or which have appeared in the Journal.)

"A simple non-splash ring for use with Scheibler's desiccator." By S. C. BRADFORD.

"The adiabatic cooling of some organic substances in dependence of pressure." By N. A. PUSHIN and E. V. GREBENSHCHIKOV.

"The action of thionyl chloride on hydroxy-anthraquinones. Part I. Alizarin. The sulphurous ester of alizarin." By A. GREEN.

"Electrolytic formation of alloys and amalgams of manganese." By A. N. CAMPBELL.

"Reactions in the hydroaromatic series resulting in the formation of aromatic compounds. Part I. The action of chlorine on 5-chloro-1 : 1-dimethyl-Δ^4-*cyclo*hexen-3-one." By L. E. HINKEL.

"The solubility of sodium fluoride in aqueous solutions of hydrofluoric acid." By D. B. JEHU and L. J. HUDLESTON.

"Titanous salts as reducing agents." By E. KNECHT.

"Condensation of aryldiazonium salts and of alkyl nitrites with certain derivatives of cyanoacetic acid." By T. K. WALKER.

"The action of diazo-salts on methyl sulphonamide." By P. K. DUTT.

"The resolution of *trans-cyclo*butane-1 : 2-dicarboxylic acid." By L. J. GOLDSWORTHY.

"Derivatives of a new form of mannose." By J. C. IRVINE and W. BURT.

"Studies on the relation between optical activity and chemical constitution. Part V. Rotatory dispersions of *d*-camphorimide, *d*-camphorbenzylimide, benzyl-*d*-camphoramic acid and their derivatives." By B. K. SINGH and A. C. BISWAS.

"The composition and properties of clay." By A. F. JOSEPH and J. S. HANCOCK.

"The ternary alloy system aluminium–cadmium–zinc." By N. F. BUDGEN.

"A new method for the quantitative determination of tri- and poly-valent kations and their separation from the bivalent by means of mercury derivatives of ammonia." By B. ŠOLAJA.

"Studies in mutual solubility. Part III. The mutual solubility of glycerol and arylamines." By R. R. PARVATIKER and B. C. MCEWEN.

"Studies in mutual solubility. Part IV. The mutual solubility o glycerol and hydroxy- and amino-derivatives." By B. C. MCEWEN.

"The direct thionation of aniline." By H. H. HODGSON.

"A modified dichromate method for glycerine determination. The hydration of curd fibres of sodium palmitate." By H. B. BENNETT.

"Photosynthesis in tropical sunlight. Part I." By R. P. SANYAL and N. R. DHAR.

"The tautomerism of amidines. Part IV. The methylation of 4(or 5)-nitroglyoxaline and 4(or 5)-phenylglyoxaline." By C. E. HAZELDINE, F. L. PYMAN, and (the late) J. WINCHESTER.

"Adsorption and constitution. The organic acids in animal charcoal." By K. M. GRIFFIN, H. L. RICHARDSON, and P. W. ROBERTSON.

"Halogenation of *s*.-dipotassium tetranitroethane." By L. HUNTER.

"An intense lithium flame for polarimetric use." By H. HUNTER.

"Organic compounds of arsenic. Part I. Derivatives of *ortho*benzarsinic acid." By J. A. AESCHLIMANN and N. P. McCLELAND.

"The yield of β-glucosane obtained from low-pressure distillation of cellulose." By H. J. P. VENN.

"The isomerism of the oximes. Part XIX. Substituted cinnamaldoximes." By O. L. BRADY and H. J. GRAYSON.

"Oxidation potentials of ferrous and ferric salts in concentrated hydrochloric acid and phosphoric acid." By S. R. CARTER and F. H. CLEWS.

"The polysulphides of the alkali metals. Part V. The monosulphide and disulphide of lithium." By J. S. THOMAS and J. H. JONES.

"Synthesis of γ-tetrahydroquinolone and a new synthesis of γ-methoxyquinoline." By G. R. CLEMO and W. H. PERKIN, jun.

"Studies in the configuration of αα′-dibromodibasic acids. Part II. Derivatives of adipic acid." By A. W. BERNTON, H. R. ING, and W. H. PERKIN, jun.

"1 : 2 : 3 : 4 : 5 : 6 : 7 : 8-Octahydrocarbazole and its derivatives." By W. H. PERKIN, jun., and S. G. P. PLANT.

"The chemistry of the glutaconic acids. Part XVI. Three-carbon tautomerism in the *cyclo*propane series. Part III. Spectrochemical evidence." By F. R. GOSS, C. K. INGOLD, and J. F. THORPE.

"The additive formation of four-membered rings. Part V. The formation of stable dimethylene-1 : 2-oxaimines from ethylenes and nitroso-compounds, with special reference to the direction of the addition." By C. K. INGOLD and S. D. WEAVER.

"Equilibrium in the systems cupric sulphate–potassium sulphate–water, and cupric sulphate–ammonium sulphate–water, at several temperatures." By R. M. CAVEN and T. C. MITCHELL.

"A criticism of the distillation method of measuring vapour pressures." By L. J. HUDLESTON.

"Electrometrical studies on azo- and hydrazo-compounds." By E. BILLMANN and J. H. BLOM.

"On nitrophenols." By S. M. SANÉ and S. S. JOSHI.

"Derivatives of methylstannonic acid. Part II." By H. LAMBOURNE.

"Strychnine and brucine. Part II." By G. R. CLEMO, W. H. PERKIN, and R. ROBINSON.

"Vinyl-derivatives, especially of carbazole and tetrahydrocarbazole, and their behaviour with acids." By G. R. CLEMO and W. H. PERKIN.

"The product of oxidation of nickel carbonyl in toluene solution." By P. C. L. THORNE.

"The oxidation of sabinol with hydrogen peroxide." By A. ROBERTSON and G. G. HENDERSON.

"The reactions of thiophosgene. Part I. The reaction between aromatic primary amino-compounds." By G. M. DYSON and H. J. GEORGE.

"Studies in the analysis of coal. Part I. Estimation of nitrogen in coal by the Kjeldahl method." By G. I. FINCH, R. P. FRASER, and E. LEWKOWITSCH.

"Orthochlorodinitrotoluenes. Part V. 2-Chloro-3:6-dinitrotoluene." By G. T. MORGAN and T. GLOVER.

"'Bitumen' in meteorites." By P. E. SPIELMANN.

"On solid phases of invariable composition." By T. W. J. TAYLOR.

"The ignition of gases. Part III. Ignition by the impulsive electrical discharge. Mixtures of the paraffins with air." By R. V. WHEELER.

CERTIFICATES OF CANDIDATES FOR ELECTION AT THE BALLOT TO BE HELD AT THE ORDINARY SCIENTIFIC MEETING ON THURSDAY, JUNE 19TH, 1924.

N.B.—The names of those who sign from "General Knowledge" are printed in *italics*.

FORBES, ALEXANDER, 564, Willoughby Road, Willoughby, Sydney, N.S.W., Australia. British. Pharmaceutical Chemist. Pharmaceutical Chemist of Queensland and New South Wales. Qualified Chemist of Great Britain and Member of the Pharmaceutical Society of Great Britain. Student of the late Dr. John Muter, F.R.S.Ed., and Johnston & Sons, 23, Cross Street, Finsbury, London. Examiner in Organic and Inorganic Chemistry to the Pharmacy Board of Queensland. Teaching and assaying. Monthly contributions to the Australasian Journal of Pharmacy on Inorganic and Organic Chemistry. I am desirous of becoming a Member in order to get up to date

literature on the above subjects. (*Signed by*) R. C. Cowley, Arthur B . Chater, J. B. Henderson.

GALLAGHER, MARK, 2, Kingsgate Terrace, Hexham-on-Tyne. Student reading for the Degree of M.Sc. Two years in laboratory of the late T. E. Riddle, Public Analyst, Hexham. B.Sc. (*Signed by*) W. N. Haworth, G. C. Leitch, W. R. Anderson.

GARNER, THOMAS LESLIE, Wymeswold, Loughboro. English. Research Student. Gained 3rd Class Honours at 1923 London B.Sc. examination and also the Diploma of Loughboro College in 1923. Now engaged at Loughboro College in research work. (*Signed by*) Arthur Bramley, Alfred Thomas Eggington, Geo. Lawton.

GEORGE, HERBERT JOHN, 22, St. John St., Oxford. British. Fellow and Assistant Tutor, Jesus College, Oxford. M.A. (Oxon), 1st Class Honours Chemistry, School of Nat. Science, Oxford, 1914. A.I.C. (*Signed by*) D. L. Chapman, F. D. Chattaway, B. Lambert.

HAMID, MOHAMMED ABDUL, Baghhanpura, Lahore, Punjab, India. Indian. Research Student, University College, London. B.Sc. with Physics and Honours in Chemistry of the Punjab University. M.Sc. in Chemistry of the Punjab University. Student Demonstrator at the Govt. College, Lahore, for one year. Worked at the Technological Institute, Cawnpore, for one year. Working at present for a London Ph.D. in Physical Chemistry under Professor F. G. Donnan, C.B.E., M.A., Ph.D., F.I.C., F.R.S. (*Signed by*) Allan E. Mitchell, F. G. Donnan, W. E. Garner.

HICKSON, JAMES ARTHUR DURHAM, 20, Ellerdale Road, Hampstead, N.W. 3. British. Research Work. 4 Years student at University College, London. B.Sc. London. Post-graduate research work under Dr. Brady. Research work with C. F. Cross (Cross & Bevan), Jan.–May, 1924. (*Signed by*) C. F. Cross, E. R. Chrystall, O. L. Brady, Bernard Dyer.

HIGHAM, HAROLD, Broadmeadow House, Teignmouth. British. Gas Engineer and Manager. Studied Gas Manufacture and Allied Chemistry at the Manchester School of Technology (now Manchester University) under Mr. F. S. Sinnatt (now Assistant Director of Fuel Research). Obtained 2nd position in England in the City and Guilds of London Institutes Examinations. Lecturer in Gas Engineering and Gas Supply at the Bradford (Yorks) Technical College. Whitworth Scholar and member of the Whitworth Society. For 12 years on the staff of the City of Bradford Gas Department, then Engineer and Manager of the Shipley Gasworks, and for the last 5½ years Gas Engineer Manager at Teignmouth. I desire to keep in touch with current chemical literature, particularly relating to the gas industry. (*Signed by*) G. W. Slatter, Ernest Quant, C. D. Birks, C. A. Pelley.

KAPUR, PURUSHOTTAM DÁS, Agra, U.P., India, but since 1919 at 2, Hayburn Crescent, Glasgow, W. 1. Indian (British subject by birth). Chemist and Sugar Technologist. Degree of B.Sc. in Applied Chemistry (Glasgow Univ.) and Diploma of the Royal Technical College, Glasgow, in Sugar Manufacture with 1st place in order of merit and 98% marks at the final diploma exam. in the principal subject and 1st Class in Bacteriology. Period devoted to the study of Theoretical and Practical Chem. and Industrial Chem., 7½ years, and 1 year's experience in sugar industry. (*Signed by*) G. G. Henderson, Thomas Gray, F. J. Wilson.

LEGGETTER, PERCIVAL CHARLES, Glencot, Hatherley Road, Gloucester. British. Science Master at Beaumont College. M.C., B.A. (Oxon.). Shortened Honours Course in Faculty of Natural Science (Chemistry). (*Signed by*) M. P. Applebey, E. G. J. Hartley, F. D. Chattaway.

MICHELI, LOUIS IVAN ALLAN, Brisbane, Australia. British. Student, M.Sc., University of Queensland, Australia, and at present engaged in research at University College, London. (*Signed by*) F. G. Donnan, Irvine Masson, Allan E. Mitchell.

ÖSTLING, GUSTAF JIM, Helsingfors, Finland. Docent at University of Helsingfors. Doctor of Philosophy at Helsingfors University, 1911. Has been studying chemistry in England in 1911 and 1912, engaged in chemical research and wishes to be in touch with research going on in England. (*Signed by*) Robert Robinson, Arthur Lapworth, W. H. Perkin, E. Hope.

PARDOE, JAMES WILLIAM, A.K.C., "Ivanhoe," Boundary Road, Wood Green, N.22. English. Head Master. 1st Class Certificates (South Kensington) in Advanced Theoretical Chemistry, Advanced Practical Chemistry. Teacher of Chemistry to upper forms for 10 years. My scheme of science includes Chemistry and I am anxious to keep abreast of current developments. I hold also advanced cert. in Physiography, Geology, Physiology, etc. (*Signed by*) Joseph S. Bridges, T. R. Lewis, W. T. Davies.

PRASAD, MADHO, Meerut College, Meerut, U.P., India. Indian. Professor, Meerut College, Meerut. (1) Master of Science in Chemistry (M.Sc.), Allahahad University, India. (2) Author of "Organic Chemistry for Intermediate Classes." (3) Professor of Chemistry for the last 8 years, teaching chemistry to Degree classes affiliated to the Allahabad University. (*Signed by*) S. S. Deshapande, N. R. Dhar, K. P. Chatterjee.

RUMSEY, JOHN HERBERT WINDOW, "Sunnybank," Knolls Green, Knutsford. British. Works chemist. Works chemist for the last 20 years at Messrs. Halden & Co., Ltd., Reddish, nr. Stockport; conducted all their research work and improvements during that period. Was one of the earliest if not the first to introduce into this country the manufacture by machinery of ferro prussiate, ferro gallic and sepia papers, for plan copying by photography. Also introduced to our firm the improved "Arc Process," direct copying by photography on zinc plates, also mass copying, styled "True to Scale" process, and other improvements in works and solutions for coating above processes, were worked out by me. (*Signed by*) Jas. R. Walmsley, G. G. Hammond, C. F. S. Rothwell.

WEBB, RALPH VICTOR, 15, Ridley Rd., Harlesden, N.W. 10. British. Lecture Assistant, University College, London. I wish to keep in touch with the progress of Chemical Research, by means of meetings, Journals and use of Library. (*Signed by*) Irvine Masson, W. E. Garner, F. G. Donnan.

WILLIAMS, RHYS, Dolfor, Wern Road, Skewen, Glam. British. Senior Chemistry Master at Dunheved College, Launceston, Cornwall. Student at University College, Cardiff, from January 1919 to June 1920, taking and completing courses of chemistry for the B.Sc. Degree in the University of Wales. Senior Science (Chem.) Master at Dunheved College since Sept. 1921. (*Signed by*) Claude M. Thompson, E. P. Perman, B. Perrott.

ZAKI, AHMAD, School of Chemistry, Liverpool University. Egyptian. Research Chemist. B.Sc. (Hon.) in chemistry from Liverpool University. (*Signed by*) E. C. C. Baly, I. M. Heilbron, William Doran, Harold Rogerson, Stanley J. C. Snedker.

The following Certificates have been authorised by the Council for presentation to ballot under Bye-Law I (2).

LINDEMAN, LUDVIG JOHANNES (JOLES LINDEMAN). Royal University of Agriculture, Aas, Norway. Norwegian. "Docent," adjointed professor. 1921 Candidatus realium (between M.A. and D.S.). 5 Years assistant in

chemistry at the Chemical Laboratory at the University of Christiania (Norway). Since 1922 adjointed professor (Colloid Chemistry) at the University of Christiania, and since the same year adjointed professor (ordinary and agriculture chemistry) at the Royal University of Agriculture, Aas. Publications in *Kolloid Zeitschrift*. (*Signed by*) S. P. L. Sórensen, The Svedberg, Sven Odén, E. J. Russell.

SMITH, LEE IRVIN, Campus Club, 112, Church St., S.E., Minneapolis, Minn., United States. Assistant Professor of Organic Chemistry, School of Chemistry, University of Minnesota, Minneapolis, Minnesota. B.A., Ohio State University, 1913. M.A., *ibid.*, 1915. M.A., Harvard University, 1917. Ph.D., Harvard University, 1920. Instruction in Chemistry, Harvard Univ., 1919–20. Instructor in Chemistry, Univ. Minnesota, 1920–21. Asst. Professor of Chemistry, Univ. Minnesota, 1921 to date. Papers: "The Reaction between Alkalis and certain Nitro*cyclo*propane Derivatives," *J.A.C.S.*, **44**, 624 (1922) (with E. P. Kohler); "The Action of Halogens on Aceto-acetic Ester," *J.A.C.S.*, **44**, 216 (1922). (*Signed by*) T. W. Richards.

ADDITIONS TO THE LIBRARY.

I. *Presented by the Society of Chemical Industry.*

FISCHER, MARTIN HENRY, with the collaboration of GEORGE D. MCLAUGHLIN and MARIAN O. HOOKER. Soaps and proteins: their colloid chemistry in theory and practice. New York 1921. pp. x + 272. ill. 24*s*. net.

FRY, HARRY SHIPLEY. The electronic conception of valence and the constitution of benzene. London 1921. pp. xviii + 300. ill. 16*s*. net.

HARVEY, ARTHUR. Tanning materials: with notes on tanning extract manufacture. London 1921. pp. viii + 182. ill. 15*s*. net.

JÖRGENSEN, INGVAR, and STILES, WALTER. Carbon assimilation: a review of recent work on the pigments of the green leaf and the processes connected with them. (New Phytologist reprint No. 10.) London 1917. pp. viii + 180. ill. 4*s*. net.

OLIVER, THOMAS. [Editor.] Dangerous trades: the historical, social, and legal aspects of industrial occupations as affecting health, by a number of experts. London 1902. pp. xxiv + 892. ill. 25*s*. net.

PARRY, ERNEST JOHN, and COSTE, JOHN HENRY. The chemistry of pigments. London 1902. pp. viii + 280. ill. 12*s*. 6*d*. net.

SABIN, ALVAH HORTON. Red-lead and how to use it in paint. 3rd edition. New York 1920. pp. xii + 140. ill. 11*s*. 6*d*. net.

II. *Miscellaneous Donations.*

ARMSTRONG, EDWARD FRANKLAND. [Editor.] Chemistry in the twentieth century: an account of the achievement and the

present state of knowledge in chemical science. Prepared under the guidance of a committee representing the scientific societies. London 1924. pp. 282. ill. 15*s.* net. (*Recd.* 7/5/24.)

From the Publishers: Messrs. Ernest Benn.

BRENCHLEY, WINIFRED ELSIE. Manuring of grass land for hay. London 1924. pp. viii + 146. ill. 12*s.* 6*d.* net. (*Recd.* 15/5/24.)

From the Lawes Agricultural Trust.

HILDEBRAND, JOEL HENRY. Solubility. New York 1924. pp. 206. ill. $3 net. (*Recd.* 31/3/24.)

From the Publishers: The Chemical Catalog Company, Inc.

IMPERIAL MINERAL RESOURCES BUREAU. The Mineral Industry of the British Empire and Foreign Countries. War Period. Petroleum and allied products. (1913–1919.) London 1924. pp. 296.

From the Director.

INDIAN INSTITUTE OF SCIENCE. Some studies in biochemistry. By some students of Dr. Gilbert John Fowler. Bangalore 1924. pp. iv + 198. ill. (*Recd.* 30/4/24.)

From the Publication Committee.

KINGZETT, CHARLES THOMAS. Chemical encyclopædia: a digest of chemistry and chemical industry. 3rd edition. London 1924. pp. x + 606. (*Reference.*) 30*s.* net.

From the Publishers: Messrs. Baillière, Tindall & Cox.

KITTO, BENEDICT TREMBATH. Tested methods of mineral analysis. London 1924. pp. 128. ill. 7*s.* 6*d.* net. (*Recd.* 18/3/24.) From the Publishers: Messrs. H. F. & G. Witherby.

LUNGE, GEORGE. The manufacture of acids and alkalis. Completely revised and rewritten under the editorship of ALEXANDER CHARLES CUMMING. Vol. II. The manufacture of sulphuric acid. (Chamber-process.) By WILFRED WYLD. London 1924. pp. xii + 424. ill. (*Reference.*) 31*s.* 6*d.* net.

—— —— Vol. III. The concentration of sulphuric acid. By JOHN WILFRID PARKES. London 1924. pp. xii + 394. ill. (*Reference.*) 31*s.* 6*d.* net. From the Publishers: Messrs. Gurney & Jackson.

MARTINET, JOSEPH. Couleur et constitution chimique. Rédigé avec la collaboration de PAULINE ALEXANDRE. Paris 1924. pp. 328. 25*fr.* net. (*Recd.* 21/3/24.)

From the Publisher: M. Gaston Doin.

MATHESIUS, WALTHER. Die physikalischen und chemischen Grundlagen des Eisenhüttenwesens. (Chem. Tech. in Einzeldarstellungen.) 2nd edition. Leipzig 1924. pp. xviii + 483. ill. (*Recd.* 25/3/24.) From the Publisher: Herr Otto Spamer.

MENSCHUTKIN, BORIS N. Carbohydrates: (the chemical compounds around us). Leningrad 1924. pp. 76. [In Russian.] (*Recd.* 5/5/24.) From the Author.

MENSCHUTKIN, BORIS N. Course of general (inorganic) chemistry. Moscow 1924. pp. 376. ill. [In Russian.] (*Recd.* 29/4/24.)
From the Author.

POLSKIEGO TOWARZYSTWA CHEMICZNEGO. Roczniki Chemji. Vol. II, etc., Warszawa 1922 +. (*For circulation.*)
From the Faraday Society.

RASCHIG, FRITZ. Schwefel- und Stickstoffstudien. Leipzig 1924. pp. viii + 310. ill. (*Recd.* 2/5/24.) From the Author.

RUSSELL, SIR EDWARD JOHN. Farm soil and its improvement. London 1923. pp. 126. ill. 7*s.* 6*d.* net. (*Recd.* 15/5/24.)
From the Author.

RUSSELL, SIR EDWARD JOHN, and members of the biological staff of the Rothamsted Experimental Station. The micro-organisms of the soil. London 1923. pp. viii + 188. ill. 7*s.* 6*d.* net. (*Recd.* 15/5/24.) From Sir John Russell.

SCIENTIFIC AND INDUSTRIAL RESEARCH, Department of. *Fuel Research Board.* Special Report No. 1. Pulverised coal systems in America. By LEONARD CHARLES HARVEY. 3rd edition. London [1924]. pp. 132. ill. (*Reference.*)
From the Department.

SOCIÉTÉ CHIMIQUE DE BELGIQUE. Bulletin. Vol. 32, etc. Gand 1923 +. (*For circulation.*) From the Faraday Society.

SVEDBERG, THEODOR. Colloid chemistry: Wisconsin lectures. New York 1924. pp. 266. ill. $3 net. (*Recd.* 22/3/24.)
From the Publishers: The Chemical Catalog Company, Inc.

UNION INTERNATIONALE DE LA CHIMIE PURE ET APPLIQUÉE. Comptes rendus de la quatrième conférence internationale de la chimie, Cambridge: 17 Juin—20 Juin 1923. Paris [1923]. pp. 204 + 40. (Three copies.) From Dr. S. Miall.

UNIVERSITY OF DURHAM PHILOSOPHICAL SOCIETY. Proceedings. Two volumes and four parts needed to complete the series.
From the Society.

III. *By Purchase.*

AINSWORTH-DAVIS, JAMES RICHARD. Crops and fruits. Resources of the Empire Series. Vol. I, part i. London 1924. pp. 144. 21*s.* net. (*Recd.* 30/4/24.)

—— Meat, fish, and dairy produce. Resources of the Empire Series. Vol. I, part ii. London 1924. pp. 104. 21*s.* net. (*Recd.* 30/4/24.)

AITKEN, JOHN. Collected scientific papers. Edited for the Royal Society of Edinburgh (with introductory memoir), by CARGILL GILSTON KNOTT. Cambridge 1923. pp. xxii + 592. ill. 30*s.* net. (*Recd.* 18/3/24.)

ANDREW, GEORGE WILLIAM. [Editor.] Fuel. Resources of the Empire Series. Vol. IV. London 1924. pp. 208. 21*s*. net. (*Recd.* 30/4/24.)

ASHE, A. W., and BOORMAN, HARRY GEORGE TRENCH. Chemicals. Resources of the Empire Series. Vol. VII. London 1924. pp. 208. 21*s*. net. (*Recd.* 30/4/24.)

BENECKE, WILHELM, and JOST, LUDWIG. Pflanzenphysiologie. 4th edition of Jost's "Vorlesungen über Pflanzenphysiologie." 2 vols. Jena 1924. pp. viii + 441, viii + 478. ill. (*Recd.* 1/5/24.)

BIRKETT, MATTHEW S. Ferrous metals. Resources of the Empire Series. Vol. VIII, part i. London 1924. pp. 166. 21*s*. net. (*Recd.* 30/4/24.)

BOISBAUDRAN, PAUL ÉMILE (DIT FRANÇOIS) LECOQ DE, and GRAMONT, (COMTE) ARNAUD DE. Analyse spectrale appliquée aux recherches de chimie minérale. 2 vols. Paris 1923. pp. liv + 342, iv + xix plates. (*Recd.* 5/4/24.)

BOLTON, EDWARD RICHARDS, and PELLY, RUSSELL GEORGE. Oils, fats, waxes, and resins. Resources of the Empire Series. Vol. IX. London 1924. pp. 276. 21*s*. net. (*Recd.* 30/4/24.)

BRAGG, SIR WILLIAM HENRY, and BRAGG, WILLIAM LAWRENCE. *X*-Rays and crystal structure. 4th edition. London 1924. pp. xii + 322. ill. 21*s*. net. (*Recd.* 18/3/24.)

CUSHNY, ARTHUR ROBERTSON. A text-book of pharmacology and therapeutics: or the action of drugs in health and disease. 8th edition. London 1924. pp. x, 17—708. ill. 24*s*. net. (*Recd.* 13/5/24.)

DULY, S. J. Timber and timber products, including paper-making materials. Resources of the Empire Series. Vol. II. London 1924. pp. 228. 21*s*. net. (*Recd.* 30/4/24.)

FREUNDLICH, ERWIN. The theory of relativity: three lectures for chemists. Translated by HENRY L. BROSE. London 1924. pp. xii + 98. ill. 5*s*. net. (*Recd.* 25/3/24.)

HARVEY, LEONARD CHARLES. Pulverised fuel, colloidal fuel, fuel economy, and smokeless combustion. London 1924. pp. xxvi + 466. ill. 42*s*. net. (*Recd.* 13/5/24.)

KAYSER, HEINRICH [GUSTAV JOHANNES], and KONEN, HEINRICH [MATHIAS]. Handbuch der Spektroskopie. Vol. VII. Part i. Leipzig 1924. pp. 498 + x. (*Reference.*)

KNECHT, EDMUND, and FOTHERGILL, JAMES BEST. The principles and practice of textile printing. 2nd edition. London 1924. pp. xx + 732. ill. 63*s*. net. (*Recd.* 13/5/24.)

MACLAREN, W. A. Rubber, tea, and cacao: with special sections on coffee, spices, and tobacco. Resources of the Empire Series. Vol. V. London 1924. pp. 334. 21*s*. net. (*Recd.* 30/4/24.)

PROCEEDINGS

OF THE

CHEMICAL SOCIETY.

Ordinary Scientific Meeting, Thursday, June 5th, 1924, at 8 p.m., Professor W. P. WYNNE, D.Sc., F.R.S., President, in the Chair.

The PRESIDENT referred to the loss sustained by the Society, through death, of :

	Elected.	Died.
Charles Thomas Blanshard	June 3rd, 1875.	May 8th, 1924.
Lewis Ough	May 7th, 1891.	April 17th, 1924.
Edgar Richards	Jan. 17th, 1889.	Jan. 21st, 1924.

The following were formally admitted Fellows of the Chemical Society : F. B. Phillips, H. Burgess.

Certificates were read for the first time in favour of :

Thomas Charles Battersby, 14*a*, Prospect Road, St. Albans.
Frank Walter Britton, 30, Frederick Road, Wylde Green, Birmingham.
Ronald George Juta Fraser, B.Sc., 65, Beaconsfield Place, Aberdeen.
Kenneth Massy Griffin, M.Sc., Government Analyst, Auckland, New Zealand.
Ian Hepburn, B.A., Polwartha, Rock, Wadebridge, Cornwall.
George Edward Draper Hunt, B.Sc., Bank Cottage, Lower Bradley Street, Wotton-under-Edge, Glos.
Ivor Evans Kear, B.Sc., Ingledene, Cinderford, Glos.
Henry Phillips, Ph.D., A.I.C., 80, Brook Street, Kennington Road, S.E. 11.
Thomas Rose, 27, Morley Carr, Lowmoor, Bradford.
Mulk Raj Saini, M.Sc., Hall Bazar, Amritsar, Punjab, India.
John Owen Thomas, Compton House, Ton Pentre, Rhondda, Glam.
John Pater Turner, M.A., South End Lodge, Newbury.

The following papers were read :

"Studies of dynamic isomerism. Part XVI. Mutarotation of beryllium benzoylcamphor. Formation of an additive compound with chloroform. The optical activity of beryllium." By H. BURGESS and T. M. LOWRY.

"Studies of valency. Part IV. The absorption spectra of camphor, benzylidene-camphor, and camphorquinone." By T. M. LOWRY and H. S. FRENCH.

"The resolution of α-terpineol." By A. T. FULLER and J. KENYON.

Extra Meeting held in the theatre of the Royal Institution (by kind permission of the Managers) on Thursday, June 12th, 1924, at 5.30 p.m., Professor W. P. WYNNE, D.Sc., F.R.S., President, in the chair.

In opening the proceedings, the President said: The Faraday Lectureship was founded in 1868 to commemorate the name of Michael Faraday, who was a Fellow of the Chemical Society almost from its foundation in 1841 to the year of his death in 1867. By the kindness of the Managers of the Royal Institution—and most appropriately in view of Faraday's long association with the Institution itself—all the lectures have been given in this theatre. This afternoon, after a long silence extending over 10 years—the last Faraday Lecture being that given in 1914 by Arrhenius—we meet for the delivery of the 12th lecture of the series. It is a happy chance that the first Faraday lecturer after the War should be a citizen of that great nation across the Atlantic which speaks our language and shares our ideals. Professor Millikan's renown as a physicist is too well known for words of introduction to be necessary; his work on the electron which represents the highest achievement in determining its weight and measuring its charge, and all those investigations of his which bring out the atomic nature of electricity are appreciated as highly in this country as in his own. Without further delay, therefore, I will ask him to be good enough to deliver the Faraday Lecture on "Atomism in Modern Physics."

At the conclusion of the lecture, the PRESIDENT, in presenting the Faraday Medal, said:

Professor Millikan—in the name of the Chemical Society it is now my pleasant duty to invite your acceptance of this medal which bears the effigy of Faraday and has been expressly struck to commemorate the present occasion. It is the highest honour which this Society, the oldest Chemical Society in the world, has to confer and in making the presentation I do assure you of the great value and importance we attach to your scientific work.

Professor DONNAN in moving the vote of thanks said:

I hope Professor Millikan will realise from the heartiness of the applause and therefore the warmth of our welcome and appreciation, that there is no relation between English heads and hearts and the coolness and humidity of English weather.

Amongst the great things that the Fellows of the Chemical Society have done, perhaps the greatest was the founding of this Memorial Lecture in honour of the immortal Faraday. The greatest men from all parts of the world had come here to pay their homage to the memory of Faraday; such men as Dumas,

Cannizzaro, Helmholtz, Richards, and Rayleigh. In the roll of honour constituted by the Faraday Lecturers, the name of Professor Millikan would always occupy a justly honoured and distinguished place. He is recognised as one of the greatest of living Physicists, whose scientific work has contributed greatly to the advance of modern electronic and atomic Physics.

My own experience is that among the great things for which the United States of America are justly renowned, the greatest is their science; there have always been great American scientists, but the last seven years are specially marked by their "red-hot" enthusiasm.

In moving a very hearty vote of thanks to Professor Millikan for his brilliant lecture, I feel I am expressing not only the feelings of myself, but also of all who are present.

Sir OLIVER LODGE, who seconded the vote of thanks, said:

I congratulate the Chemical Society on being able to hand over a Faraday Medal in Faraday's own theatre to a worthy disciple of Faraday.

I had not realised that atomism in Electricity could be traced back, in any sense, to Franklin. But as regards Clerk Maxwell, though his theory was a continuous one, he was certainly impressed with the atomic character of electrolytic evidence, and I was much struck with a sentence in which he said that he expected many discoveries in the future from detailed investigation into the passage of electricity through rarefied gases,* an intimation since abundantly confirmed, though 1873 was before the active days of Sir J. J. Thomson.

Professor Millikan's lecture has been a pæan of victory over the conquest of the electron and the atom. His method of oiling the electron so as to see what it is doing, his accurate measurement of the unit charge by this means, and his vivid demonstration of discontinuity, he has only here touched on lightly; but they are a brilliant and well-known piece of work, and are now, I presume, getting into the text-books.

I saw Professor Millikan at work in Chicago before he went to Pasadena, and that great man Professor Michelson also. Like everybody else I was struck with the superabundant energy and enthusiasm with which the sciences of Physics and Astronomy are

* Speaking of the Gassiot strictions in vacuum tubes, Maxwell says: "These, and many other phenomena of electrical discharge, are exceedingly important, and when they are better understood they will probably throw great light on the nature of Electricity as well as on the nature of gases and of the medium pervading space. At present, however, they must be considered as outside the domain of the mathematical theory of Electricity."

being worked at and blended on the other side of the Atlantic, in so many of the Universities, and with such splendid experimental resources, more lavish than anything provided in this country. It is a mixed joy to see the centre of gravity of scientific research moving west, but we can comfort ourselves with the thought that the foundations were laid on this side.

The results he mentioned at the end were more difficult to follow because they are so new, they are still incubating; but his reconciliation of Compton and Duane is of great interest. And he seems at the back of his mind to have some idea of reconciling Bohr with Langmuir and Lewis, which is difficult. The kinetic atom is, I believe, true, but it is difficult to build into molecules: I am not surprised that chemists at present prefer the static atom. But evidently Professor Millikan has more to say on localised valency in due time.

So long as he is on electrons and atoms all goes triumphantly, but when he comes to the ether there is a fog. In radiation at present everything is not clear. There are more worlds to conquer there. We do not rightly understand the quantum yet. When we do, the present Keplerian age will give place to the Newtonian age which is to follow.

The vote of thanks was carried with acclamation, and in making brief acknowledgment PROFESSOR MILLIKAN said:

I have been very deeply touched by the remarks of the speakers, by the kindly appreciation of the audience, and by the unexpected presentation of the Faraday medal; for I have only at this moment become conscious of the fact that the Faraday Medal goes with the Faraday lectureship.

No memento could possibly be more dear to me than one which associates me in any way, however remote, with that universally beloved and admired man whose work was the starting point of the most important developments, scientific and industrial alike, of the past hundred years.

I have always looked upon the spot where Faraday lived and worked as the physicists' holy ground. To be in that spot itself, and to be given there a place in the limited succession of Faraday medallists I deem as high an honour as any scientist can aspire to.

But such an association with Faraday is but one of the causes of my present emotion. I myself am sprung wholly from British stock and, like most thoughtful Americans, I am an ardent believer in those ideals of civilisation which have had their chief development in this island and still find in many ways their finest expression here. I am therefore deeply touched by the kindly feelings

for America, and the kindly appreciation of American scientific effort which I find about me and which the speakers themselves have voiced.

If I may presume to speak for America I would say that whatever contrary impression you may receive from occasional utterances in certain highly discreditable portions of our press, the most representative feeling in America toward Great Britain is still, and I think is likely to remain, that of the child toward its parent. Our two countries represent but slightly different ideals, and are exerting much the same sort of influences upon the progress of civilisation. Where the centre of gravity of those influences shall be in the future is not yet determined, nor is it after all of great importance. The influences themselves unquestionably had their origins primarily in England, and England will have played the greatest rôle which it is given to a nation or to an individual to play when her ideals shall have spread throughout a world which sorely needs them.

In concluding the meeting, the PRESIDENT said :

Only one more thing remains to be done, and that is to give expression to the gratitude we all feel towards the Members and Managers of the Royal Institution for placing this historic theatre at our service for the purpose of this lecture. Everyone here must recognise that for us—chemists and physicists alike—this spot is hallowed ground—a fact which enhances our appreciation of the Institution's act of kindness so often renewed.

The vote of thanks was then moved from the Chair and passed with acclamation.

Extraordinary General Meeting, June 19th, 1924, at 7.45 p.m., Professor W. P. WYNNE, D.Sc., F.R.S., President, occupied the Chair, and there were present 64 Fellows.

The notice convening the meeting was read and the President briefly indicated the reasons that had led the Council to put forward the proposed changes in the Bye-Laws.

On the motion of Professor C. K. Ingold, seconded by Professor D. R. Boyd, the following alterations were carried *nem. con.* :

1. That in Bye-Law I, paragraph 6 (p. 4) the following be deleted :

> " The person thus elected shall within three months of his election, or such further time as may be allowed by the Council, pay an admission fee and also his first annual subscription or

a life composition fee, otherwise his election shall be void. He shall also sign "

and that the following be substituted therefor :

" The amount of the admission fee, if any, payable on election to Fellowship, and the amount of the annual subscription and of the life composition fee shall be determined by the Council from time to time subject to confirmation by an Extraordinary General Meeting of the Society : Provided that the Council shall have power without such confirmation either wholly to remit or to reduce the admission fee, or to permit its payment by instalments extending over a term of years or otherwise, whenever it may consider it desirable to do so. The application of a candidate for election shall be accompanied by a deposit covering the admission fee, if any, or such part thereof as may be required by the Council, and the first annual subscription, which deposit shall be returned to the candidate in the event of non-election. The person thus elected shall sign "

The following alterations were proposed from the Chair and were also carried *nem. con.* :

2. That in Bye-Law I, paragraph 8 (pp. 4 and 5) the following be deleted :

" The amount of the admission fee, the annual subscription and the life composition fee shall be determined by the Council, subject to confirmation by an Extraordinary General Meeting of the Society."

3. That letter No. 2 in the Appendix referred to in Bye-Law X (p. 11), notifying the Election of a Fellow, be altered to read as follows :

" Dear

" I have the honour to inform you that on the day of you were elected a Fellow of the Chemical Society.

" I herewith transmit you a copy of the Bye-Laws, etc., according to which you are required to return the accompanying Obligation Form, duly signed, to the Secretaries.

" I am,

" Yours faithfully,

" *Secretary.*"

Dr. R. H. Pickard proposed the following alteration :

4. That in Bye-Law XVI, the last paragraph

" Each author of a paper published by the Society shall be entitled to ten copies of such paper free of expense."

be deleted.

This was seconded by Dr. N. V. Sidgwick and after discussion was declared carried by a majority of 39 to 7.

Ordinary Scientific Meeting, Thursday, June 19th, 1924, at 8 p.m., Professor W. P. WYNNE, D.Sc., F.R.S., President, in the Chair.

The PRESIDENT referred to the loss sustained by the Society, through death, of :

	Elected.	Died.
Robert Mullineux Walmsley	March 1st, 1883.	June 15th.

The PRESIDENT announced :

1. That it has been decided that for reasons of economy the List of Fellows shall not be published this year.

2. That, in future, a charge will be made to Fellows for the Annual Reports, and that each Fellow will have the privilege of purchasing one copy of each volume of the Annual Reports for 1924 onwards, at 5*s*. 6*d*. post free. Further copies will be charged at the rate of 8*s*. 6*d*. post free, the price to the public being 10*s*. 6*d*., postage extra.

3. That Volume V of the Collective Index (which has been sold at a reduced price since January, 1923) will now be charged at the original price, *i.e.* £2 to Fellows, and £2 10*s*. to the Public.

The following were formally admitted Fellows of the Chemical Society : Walter A. Woodrow, E. Pritchett, F. Beresford Windle, and Francis W. Hodges.

Certificates were read for the first time in favour of :

Mostafa Badia, 6, First Avenue, Selly Park, Birmingham.
Len Riley Roberts, O.B.E., National Oil Refineries, Ltd., Skewen, Neath.
Oswald Counsell Stephens, M.Sc., Temuka, Timaru, New Zealand.
Ernest William Wignall, 9, Tredegar Terrace, Bow, E. 3.

The following Certificates have been authorised by the Council for presentation to ballot under Bye-Law I (2) in favour of :

Harold William Beardall, P.O. Box 34, Newcastle, Natal, S. Africa.
William George Gill, c/o Messrs. A. H. Wardle & Co., Ltd., Mombasa, B.E. Africa.

Professor A. J. Hale and Mr. E. Wheeler were elected Scrutators, and a ballot for the election of Fellows was held, the following subsequently being declared elected as Fellows :

Alexander Forbes.
Mark Gallagher, B.Sc.
Thomas Leslie Garner, B.Sc.
Herbert John George, M.A., A.I.C.
Mohammed Abdul Hamid, M.Sc.
James Arthur Durham Hickson, B.Sc.
Harold Higham.
Purushottam Das Kapur, B.Sc.
Percival Charles Leggetter, M.C., B.A.
Ludvig Johannes Lindeman.
Louis Ivan Allan Micheli, M.Sc.
Gustaf Jim Ostling, Ph.D.
James William Pardoe, A.K.C.
Madho Prasad, M.Sc.
John Herbert Window Rumsey.
Lee Irvin Smith, M.A., Ph.D.
Ralph Victor Webb.
Rhys Williams.
Ahmad Zaki, B.Sc.

The following papers were read :

"Hydrolysis : and the theory of induced alternate polarities." By D. R. Boyd.

"The isomerism of the oximes. Part XX. The isomeric *p*-nitrobenzophenone oximes and the four methyl ethers derived from them." By O. L. Brady and R. P. Mehta.

"The significance of simple rotatory dispersion." By T. M. Lowry and E. M. Richards.

THE LIBRARY.

The Library will be closed for Stocktaking from Monday, August 4th, until Saturday, August 16th, 1924.

During the four weeks August 18th to September 13th, the Library will close daily at 5 p.m.

List of papers, or Abstracts thereof, received between May 16th and June 19th, 1924. (This list does not include the titles of papers which have been read at a Scientific Meeting, or which have appeared in the Journal.)

"The action of hydrazines on semicarbazones. Part I." By M. M. J. Sutherland and F. J. Wilson.

"Photochemical reactions in circularly polarised, plane polarised, and ordinary light. The velocity of reactions between bromine and (1) cinnamic acid, (2) stilbene." By J. C. Ghosh and R. M. Purkayastha.

"Studies in the configuration of $\alpha\alpha'$-dibromodibasic acids. Part III. The $\alpha\alpha'$-dibromosuccinic acids." By H. R. Ing and W. H. Perkin, jun.

"The bromination of acetylphenylhydrazine : the preparation of 2 : 4-dibromophenylhydrazine." By J. E. Humphries and R. Evans.

"Note on a device for maintaining a constant level in a water-bath." By R. Brooks.

"Studies in the phenylsuccinic acid series. Part VIII. The

resolution of *r*-diphenylsuccinalic and *r*-diphenylsuccino-*p*-toluidic acids into their optical antipodes." By H. WREN and R. E. BURROWS.

"An apparatus for collecting a gas at a constant pressure." By H. J. E. DOBSON.

"The behaviour of titanic acid towards hydrochloric acid." By A. M. MORLEY and J. K. WOOD.

"The fractionator." By W. J. GOODERHAM.

"The density of the oxides of zirconium and hafnium." By G. V. HEVESY and V. BERGLUND.

"A new form of extraction apparatus." By H. H. GOLDTHORPE.

"The hydrolysis of the *p*-toluenesulphonchloroamides in water." By F. G. SOPER.

"Application of the Grignard reaction to some acetylenic compounds. Part II." By F. J. WILSON and W. M. HYSLOP.

"Hydrolysis: and the theory of induced alternate polarities." By D. R. BOYD.

"A method of filling long mercury manometers." By E. SWAN.

"Studies with the microbalance. Part I. The photochemical decomposition of silver bromide." By E. J. HARTUNG.

"Contributions to the chemistry of cadinene. Part I." By G. G. HENDERSON and A. ROBERTSON.

"The explosion of acetylene and nitrogen. Part III. The effect of the addition of oxygen on the production of hydrocyanic acid." By W. E. GARNER and S. W. SAUNDERS.

"Fission of the pyridine nucleus during reduction." By B. D. SHAW.

"The colorimetric dissociation constants of the mono- and di-nitroquinols." By E. B. R. PRIDEAUX and G. R. NUNN.

"The isomerism of the oximes. Part XX. The isomeric *p*-nitrobenzophenone oximes and the four methyl ethers derived from them." By O. L. BRADY and R. P. MEHTA.

"The interaction of acetoacetic ester with *o*-hydroxydistyryl ketones." By I. M. HEILBRON and T. A. FORSTER.

"The chemistry of the glutaconic acids. Part XVI. The tendency towards reversion to type." By C. K. INGOLD, J. H. OLIVER, and J. F. THORPE.

"Elimination of the amino-group of tertiary amino-alcohols. Part II. The semipinacolinic deamination of β-hydroxy-αβ-diphenyl-β-naphthylethylamine." By A. MCKENZIE and W. S. DENNLER.

"Studies in the organic polysulphides. Part III. The action of the disulphides of the alkali metals and of sodium tetrasulphide on some organic halogen compounds." By J. S. THOMAS and R. W. RIDING.

"Tesla-luminescence spectra. Part IV. Some hydrocarbons containing a single benzene nucleus." By W. H. McVicker, J. K. Marsh, and A. W. Stewart.

"The preparation of octadecyl malonic acids, arachidic acid, and some derivatives of long chain aliphatic compounds." By N. K. Adam and J. W. W. Dyer.

"Derivatives of 1 : 8-naphthalic acid. Part I. The preparation and properties of 1 : 8-naphthaloyl chloride." By F. A. Mason.

"Derivatives of 1 : 8-naphthalic acid. Part II. The preparation and properties of 1-benzoylnaphthalene-8-carboxylic acid and its derivatives." By F. A. Mason.

"Studies in the resolution of racemic acids by optically active alcohols. Part III. The resolution of *r*-tartaric and *r*-dimethoxysuccinic acids by *l*-menthol." By H. Wren and K. H. Hughes.

"ψ-Epiberberine." By J. S. Buck and W. H. Perkin, jun.

"ψ-Berberine." By R. D. Haworth, W. H. Perkin, jun., and J. Rankin.

"The volumetric determination of total carbonic acid in dilute solutions of calcium bicarbonate." By E. M. Crowther and W. S. Martin.

"Absorption spectra and molecular phases. Part II." By R. A. Morton and A. McGookin.

"Absorption spectra and molecular phases. Part III." By R. A. Morton.

"The mono-nitration of *p*-chlortoluene." By H. H. Hodgson and P. Anderson.

"On the so-called poisoning of oxidising catalysts." By C. Moureu and C. Dufraisse.

"The properties of ammonium nitrate. Part IX. The reciprocal salt pair ammonium nitrate and lithium chloride." By E. P. Perman and W. R. Harrison.

"Studies on the Walden inversion. Part VIII. The influence of the solvent on the sign of the product in the conversion of β-hydroxy-β-phenylpropionic acids to β-bromo-β-phenylpropionic acids." By G. Senter and A. M. Ward.

"The isomerism of the styryl alkyl ketones. Part I. The isomerism of 2-hydroxystyryl methyl ketone." By A. McGookin and I. M. Heilbron.

"Chloro-perbromide equilibria." By E. A. Dancaster.

"The viscosity and surface tension of solutions of iodine and potassium iodide." By E. A. Dancaster.

ADDITIONS TO THE LIBRARY.

I. *Donations.*

ANDRUSSOV, NIKOLAI IVANOVIČ [and others]. Le karabougaz et son importance industrielle. 2nd edition. Petrograd 1922. pp. 172. ill. [In Russian.]

CRANSTON, JOHN ARNOLD. The structure of matter. London 1924. pp. xvi + 196. ill. 12*s.* 6*d.* net. (*Recd.* 11/6/24.)
From the Publishers: Messrs. Blackie & Son.

HEPWORTH, HARRY. Chemical synthesis: studies in the investigation of natural organic products. London 1924. pp. xx + 244. ill. 20*s.* net. (*Recd.* 28/5/24.)
From the Publishers: Messrs. Blackie & Son.

HOGBEN, LANCELOT T. The pigmentary effector system: a review of the physiology of colour response. Edinburgh 1924. pp. xii + 152. ill. 10*s.* 6*d.* net. (*Recd.* 11/6/24.)
From the Publishers: Messrs. Oliver & Boyd.

PARTINGTON, JAMES RIDDICK, and SHILLING, WILLIAM GEORGE. The specific heats of gases. London 1924. pp. 252. ill. 30*s.* net. (*Recd.* 30/5/24.) From the Publishers: Messrs. Ernest Benn.

ROYAL COLLEGE OF SCIENCE CHEMICAL SOCIETY. Journal. Vol. III: containing the papers read during the session 1923—1924. London 1924. pp. 52. ill. (*Reference.*) From the Society.

ROYAL SOCIETY OF LONDON. Handbook to the exhibition of pure science: British Empire Exhibition, 1924. [London 1924]. pp. 228. ill. (*Reference.*)
From the British Empire Exhibition Committee.

THOMAS, WILLIAM. Complex salts. London 1924. pp. xii + 122. ill. 10*s.* net. (*Recd.* 28/5/24.)
From the Publishers: Messrs. Blackie & Son.

II. *By Purchase.*

BALY, EDWARD CHARLES CYRIL. Spectroscopy. 3rd edition. Vol. I. London 1924. pp. xii + 298. ill. 14*s.* net. (*Recd.* 18/6/24.)

EMICH, FRIEDRICH. Mikrochemisches Praktikum: eine Anleitung zur Ausführung der wichtigsten mikrochemischen Handgriffe, Reaktionen und Bestimmungen mit Ausnahme der quantitativen organischen Mikroanalyse München 1924. pp. xiv + 174. ill. (*Recd.* 11/6/24.)

GEORGIEVICS, GEORG. Lehrbuch der chemischen Technologie der Gespinstfasern. [II.] Gespinstfasern, Wäscherei, Bleicherei, Färberei, Druckerei und Appretur. 4th edition, edited by GEORG GEORGIEVICS and GUSTAV ULRICH. Leipzig 1924. pp. viii + 416. ill. (*Recd.* 11/6/24.)

HABER, FRITZ. Fünf Vorträge aus den Jahren 1920—1923. Berlin 1924. pp. vi + 92. (*Recd.* 11/6/24.)

HAUSBRAND, EUGEN. Drying by means of air and steam: explanations, formulæ and tables for use in practice. 3rd English edition. Translated from the German by A. C. WRIGHT. London 1924. pp. viii + 78. ill. 6*s*. net. (*Recd.* 18/6/24.)

HEUSER, EMIL. Textbook of cellulose chemistry. Translated from the 2nd German edition by CLARENCE JAY WEST and GUSTAVUS J. ESSELEN, Jr. New York 1924. pp. xii + 212. 12*s*. 6*d*. net. (*Recd.* 18/6/24.)

KNIBBS, NORMAN VICTOR SYDNEY. Lime and magnesia: the chemistry, manufacture and uses of the oxides, hydroxides and carbonates of calcium and magnesium. London 1924. pp. 306. ill. 30*s*. net. (*Recd.* 18/6/24.)

LAAR, JOHANNES JACOBUS VAN. Die Zustandsgleichung von Gasen und Flüssigkeiten. Leipzig 1924. pp. x + 368. ill. (*Recd.* 11/6/24.)

LANDER, CECIL HOWARD, and MCKAY, ROBERT FERRIER. Low temperature carbonisation. London 1924. pp. 278. ill. 35*s*. net. (*Recd.* 16/5/24.)

MASSACHUSETTS INSTITUTE OF TECHNOLOGY. Journal of Mathematics and Physics. Vol. I, etc. Massachusetts 1921—22. (*Reference.*)

MATHEWS, JOSEPH HOWARD. [Editor.] Colloid symposium monograph: papers and discussions presented at the First National Symposium on Colloid Chemistry. University of Wisconsin, June, 1923. Madison 1923. pp. 420. ill. 18*s*. net. (*Recd.* 13/6/24.)

MATTHEWS, J. MERRITT. The textile fibers: their physical, microscopical and chemical properties. 4th edition. New York 1924. pp. xviii + 1054. ill. 50*s*. net. (*Recd.* 18/6/24.)

MEDICAL RESEARCH COUNCIL. Report on the present state of knowledge of accessory food factors (vitamins). 2nd edition. London 1924. pp. iv + 172. ill. 4*s*. 6*d*. net. (*Recd.* 18/3/24.)

[MEDICAL RESEARCH COUNCIL. *Alcohol Investigation Committee.*] Alcohol: its action on the human organism. 2nd edition. [London 1924.] pp. xx + 170. 1*s*. net. (*Recd.* 20/3/24.)

MENDEL, LAFAYETTE BENEDICT. Nutrition: the chemistry of life. New Haven 1923. pp. xii + 150. ill. 14*s*. net. (*Recd.* 17/4/24.)

MILLS, ADELBERT P. Materials of construction: their manufacture and properties. 2nd edition. Edited by HARRISON W. HAYWARD. New York 1922. pp. x + [480]. ill. 20*s*. net. (*Recd.* 18/3/24.)

PROCEEDINGS

OF THE

CHEMICAL SOCIETY.

Ordinary Scientific Meeting, Thursday, October 16th, 1924, at 8 p.m., Professor W. P. WYNNE, D.Sc., F.R.S., President, in the Chair.

The PRESIDENT referred to the loss sustained by the Society through the death of Sir James J. Dobbie on June 19th, and announced that on June 26th the Council had passed the following resolution:

> "On behalf of the Chemical Society the Council desires to express its sense of the great loss the Society has sustained in the death of Sir James Johnston Dobbie, who served as President from 1919–1921 and as Vice-President during a period of five years, and offers to Lady Dobbie and family deep sympathy in their bereavement."

The Fellows present expressed their concurrence in this resolution by rising from their places.

The following deaths also were intimated:

	Elected.	Died.
John Allen	May 5th, 1870.	Aug. 30th.
George H. Allibon	Dec. 6th, 1894.	Mar. 21st, 1923.
Montague K. Bamber	Dec. 4th, 1890.	Sept. 20th.
Sir George Beilby	Dec. 19th, 1872.	Aug. 1st.
Katherine A. Burke	Feb. 16th, 1922.	July 6th.
William Henry Coates	Feb. 3rd, 1887.	Mar. 28th.
Herbert Henry Dains	Feb. 15th, 1894.	Oct. 15th.
Thomas Farrington	Dec. 2nd, 1880.	May 2nd.
Otto Hehner	Nov. 2nd, 1876.	Sept. 9th.
Frederick W. Pittuck	May 4th, 1899.	May 22nd.
Sir Sydney Russell-Wells	Feb. 6th, 1890.	July 14th.
Lionel Gowing-Scopes	Dec. 7th, 1911.	Aug. 16th.
Henry George Smith	Feb. 20th, 1896.	Sept. 19th.
Julius Wertheimer	Mar. 4th, 1886.	Aug. 9th.

The PRESIDENT announced that :

1. The following gifts have been received by the Council :

(*a*) Typescript copy of the Life of J. B. Dumas, presented by his grandson, the author, General J. B. Dumas.

(*b*) Medal of G. Lunge, presented by Professor P. P. Bedson.

(*c*) Donation of £10 10*s*. 0*d*. to the Library from the Research Association of the British Rubber and Tyre Manufacturers.

2. The Council had sealed the following Address which was presented by Professor F. G. Donnan on the occasion of the Centenary Celebrations of the Franklin Institute on September 17th to 19th, 1924 :

" The President, Council and general body of Fellows of the Chemical Society desire to offer to the President, Management, and Members of the Franklin Institute most cordial congratulations on the occasion of the Centenary celebration of the Institute.

" Founded with the object of the promotion of manufactures and of the mechanical and useful arts, the Institute was also to serve as a perpetual remembrance of the great man of whom Washington said, ' If to be venerated for benevolence, if to be admired for talents, if to be esteemed for patriotism, if to be beloved for philanthropy, can gratify the human mind, you must have the pleasing consolation to know that you have not lived in vain.'

" It is not then surprising to find that the activities of the Institute have been as many-sided as those of the man it honours, and the scientific world has learnt to admire the achievements of an Institute which for one hundred years past has contributed so largely to the intelligent promotion of science and its applications, and thus indirectly to the welfare of mankind. The world in general is still unconvinced that ' It is science, not chance, which is every day bringing to light discoveries and inventions which facilitate the labours and enlarge the comforts and power of man.'

" Franklin considered it a duty for every one, in his own sphere of industry, to contribute something, by scientific research, to the sum of existing knowledge. If this ideal has not yet been attained, the labours of the Franklin Institute have at least done much to make it a possibility.

" The Chemical Society recognises the importance of the great work already accomplished by the Institute in this direction, and is confident that its future endeavours will

greatly assist in furthering the belief that in the application of science to human affairs lies the only guarantee of progress.

"Signed on behalf of the Chemical Society,

W. P. WYNNE, *President.*
J. F. THORPE, *Treasurer.*
L.S. T. SLATER PRICE, C. S. GIBSON, *Secretaries.*
ARTHUR W. CROSSLEY, *Foreign Secretary.*

"Sealed in Council this Nineteenth day of June, One Thousand Nine Hundred and Twenty-Four."

3. The Council had sealed the following address which is to be presented by Professor H. E. Armstrong and Professor T. M. Lowry to the Netherland Chemical Society and the Netherland Society of Chemical Industry, Amsterdam, on October 25th, 1924, to commemorate the celebrations of the 50th Anniversary of the foundation of Stereochemistry by van't Hoff and Le Bel in 1874 :

"The President, Council and Fellows of the Chemical Society rejoice to learn that the Netherland Chemical Society and the Netherland Society of Chemical Industry are meeting in Amsterdam to commemorate the 50th anniversary of the foundation of Stereochemistry by Jacobus Henricus van't Hoff and Joseph Achille Le Bel.

"The names of these two savants are indissolubly inscribed on one of the most important milestones indicative of the advances of modern chemical thought and practice, for the masterly conception which they gave to the chemical world has proved a fruitful incentive to brilliant researches, which have not only confirmed their theoretical reasoning, but have also immeasurably widened our knowledge of chemical structure.

"The Chemical Society, which is proud to have both names on its list of Foreign Fellows, welcomes this opportunity of joining with its sister Societies of the Netherlands in doing honour to van't Hoff and Le Bel and in paying its homage to their genius.

"Signed on behalf of the Chemical Society,

W. P. WYNNE, *President.*
J. F. THORPE, *Treasurer.*
L.S. T. SLATER PRICE, C. S. GIBSON, *Secretaries.*
ARTHUR W. CROSSLEY, *Foreign Secretary.*

"Sealed in Council this Sixteenth day of October, One Thousand Nine Hundred and Twenty-Four."

4. The congratulations of the Chemical Society were conveyed by the Treasurer to the Rensselaer Polytechnic Institute, Troy, on the occasion of the Centenary Celebrations on October 3rd and 4th.

5. The following cable had been sent to Sir Prafulla Rây on the formation of the Indian Chemical Society, of which he is the first President:

> "The President and Council of the Chemical Society send hearty congratulations and warm wishes to the newly-formed Indian Chemical Society."

6. On June 19th the Council elected as additional Members of the Publication Committee: Professor H. B. Baker, Professor H. Bassett, Dr. H. W. Dudley, Mr. U. R. Evans, Dr. T. A. Henry, Professor T. M. Lowry, and Professor G. T. Morgan, and at its meeting this afternoon appointed Dr. N. V. Sidgwick as Chairman of the Committee.

7. The Council has appointed as its Representatives on the Bureau of Chemical Abstracts for 1924–1925: Professor C. S. Gibson, Professor G. T. Morgan, Professor J. F. Thorpe and Professor W. P. Wynne.

8. The Council has resolved to remit for a time the payment of the Admission Fee by newly-elected Fellows.

9. In continuance of the arrangement reached last year Members of the Society of Chemical Industry may procure the Abstracts in Pure Chemistry for 1925 for the sum of £1 10*s*., and the Annual Reports for 1924 for the sum of 9*s*., post free; while Fellows of the Chemical Society can obtain "Chemistry and Industry" and Abstracts in Applied Chemistry for 1924 at £1 and £1 10*s*., respectively; or both publications together for £2.

Fellows of the Chemical Society desiring the publications of the Society of Chemical Industry must apply direct to the Secretary of the Society of Chemical Industry.

10. Arrangements have been made by which the Journal of the American Chemical Society, Industrial and Engineering Chemistry, and Chemical Abstracts, published by the American Chemical Society, can be obtained by Fellows at the following reduced rates:

$15·00	plus	$2·50	postage for	all three per annum
$11·50	„	$2·00	„ for any	two „
$6·25	„	$1·00	„ for any	one „

while "Chemical Reviews" is offered to Fellows at $4·00 plus 50 cents postage.

Application, accompanied by a remittance, should reach Dr. Charles L. Parsons, Secretary, American Chemical Society, 1709,

G. Street, N.W., Washington, D.C., U.S.A., not later than the 1st December, 1924.

11. A meeting of the Research Fund Committee will be held in December next. Applications for Grants, to be made on forms obtainable from the Assistant Secretary, must be received on or before Monday, December 1st, 1924. Applications from Fellows will receive prior consideration.

All persons who received Grants in December, 1923, or in December of any previous year, whose accounts have not been closed by the Council, are reminded that Reports must be returned by December 1st.

Certificates were read for the first time in favour of :

Isidore Elkanah Balaban, 72, Parkhill Road, Hampstead, N.W. 3.
Reginald Furlong Barnes, A.R.C.S., 75, Swinderby Road, Wembley.
Sydney Barratt, B.A., 39, St. Michael's Road, Headingley, Leeds.
Eric Albert Bevan, B.Sc., 90, Wickham Road, Brockley, S.E. 4.
William Norman Bowran, 257, Prince Consort Road, Gateshead-on-Tyne.
Alan Edwin Bradfield, B.Sc., 1, Garth Hill Cottages, Bangor.
George Thomas Byrne, M.Sc., A.I.C., The University, Hong Kong.
Thomas Henry Clare, 41, Maddox Street, Bond Street, W. 1.
Francis Ernest Corringham, 4, Gordon Road, Sevenoaks.
Colin Falconer Flint, B.Sc., A.R.C.S., 41, Priory Road, Hornsey, N. 8.
Walter Brendon Garner, 307/13, Murray Street, Perth, Western Australia.
Herbert Greene, M.C., B.Sc., Ph.D., Gordon College, Khartoum, Sudan.
Harold Ainsworth Harrison, M.Sc., Bobbin Hall, Blackrod, Chorley, Lancs.
Philip William Benson Harrison, B.Sc., 140, Stapleton Hall Road, N. 4.
Thomas Raymond Hodgson, B.Sc., Mown Meadows, Crook, co. Durham.
Joseph Holloway, B.Sc., A.I.C., 39, Elmfield Road, Bromley.
William Plenderleith Lewellen Hope, B.Sc., A.I.C., 6, Cornwall Avenue, Finchley, N. 3.
Charles Ignatius Kelly, M.Sc.Tech., 2, Thomas Street, Carnarvon.
James Craib Lithgow, 23, Lauderdale Avenue, Newlands, Glasgow.
Maung Maung, A.R.C.S., 39, St. Peter's Square, Hammersmith, W. 6.
Stanko Stankov Miholić, Ph.D., 45, Jurjevska, Zagreb, Jugoslavia.
George Morrison Moir, M.Sc., 184, Shetland Street, Wakari, Dunedin, N.Z.
Tatsuo Nakasato, Pharmaceutical Institute, Imperial University, Tokyo, Japan.
Harold Eugene Frederick Notton, B.Sc., A.R.C.S., University Chemical Laboratories, Cambridge.
Sidney Gordon Penn, 182, Monument Road, Edgbaston, Birmingham.
Henry Lorimer Richardson, M.Sc., Imperial College of Science and Technology, South Kensington, S.W. 7.
Tandalam Lakshman Row, 21, Cromwell Road, South Kensington, S.W. 7.
David Alexander Ruffman, 187, Cromwell Road, Earl's Court, S.W. 5.
Nathan Sachs, Merton, Forest Hill, Orangezicht, Cape Town, South Africa.
Sarbbani Sahay Guha Sircar, 21, Cromwell Road, South Kensington, S.W. 7.
Neil Bulloch Stewart, 49, Roslea Drive, Dennistoun, Glasgow.
Roy Brown Strathdee, M.A., B.Sc., Emmanuel College, Cambridge.
Charles Edward Sutcliffe, West House, Agbrigg, Wakefield.
Charles Henry Thomson, 6, Lethington Avenue, Langside, Glasgow.

Percy Alexander Tucker, Braemore, Little Green Lanes, Erdington, Birmingham.
Arthur Eric Jarvis Vickers, B.Sc., 27, Lily Street, Wolstanton, Stoke-on-Trent.
John Harry Village, B.Sc., 61, Broxholme Lane, Doncaster.
Charles William Henry Vivian, B.Sc., A.I.C., 48, Clifford Road, East Finchley, N.2.
Eric Voelcker, 7, Durham Villas, Kensington, W. 8.
William Day Wallace, 25, Grafton Square, Clapham, S.W. 4.
James Roy Gibson Welsh, 46, Minard Road, Partickhill, Glasgow.

The following certificates have been authorised by the Council for presentation to ballot under Bye-Law I (2):

Krishna Pillai Padmanabha Pillay, B.A., Cottage Gardens, Kilpauk, Madras
Syed Abdur Razzach, Hyderabad.
Moung Ba San, B.A., 3, Stewart Road, Rangoon.
Moung Tun Tin, B.A., 3, Stewart Road, Rangoon.

The following papers were read:

"The influence of catalysts on carbonisation." By R. LESSING and M. A. L. BANKS.

"The photosensitive formation of water from its elements in the presence of chlorine." By R. G. W. NORRISH and E. K. RIDEAL.

"The directive influence of substituents in the glyoxaline nucleus on substitution in the benzene nucleus of phenylglyoxalines—the nitration of 2-phenylglyoxaline and its carboxylic acids." By F. L. PYMAN and E. STANLEY.

List of papers, or Abstracts thereof, received between June 20th and October 16th, 1924. (This list does not include the titles of papers which have been read at a Scientific Meeting, or which have appeared in the Journal.)

"Polarity effects in the isomeric ω-bromoxylenes and isomeric iodotoluenes." By J. B. SHOESMITH and R. H. SLATER.

"The reactions of alizarin sulphite with carboxylic acids, their anhydrides and chlorides." By A. GREEN.

"The action of caustic alkali on bromdiethylacetylcarbamide." By G. NEWBERY.

"Extraction of the isomeric xylenes from crude xylol." By T. S. PATTERSON, A. MCMILLAN, and R. SOMERVILLE.

"Studies in optical superposition. Part VI. The *sec.*-octyl dimethoxy succinates." By T. S. PATTERSON and C. BUCHANAN.

"The ionisation constant of hypochlorous acid." By F. G. SOPER.

"Some electrochemical aspects of the oxidising properties of sulphur dioxide." By S. R. CARTER and F. JAMES.

"Cryoscopic measurements with nitrobenzene. Part II. The variation of the molecular lowering with water content." By F. S. BROWN and C. R. BURY.

"The atomic weights of carbon and silver." By G. DEAN.

"The colours produced by the action of sulphuric acid upon hydrazones and hydrazides." By F. D. CHATTAWAY, S. J. IRELAND, and A. J. WALKER.

"The complexity of the solid state. The behaviour of pure sulphur trioxide. Part I." By A. SMITS and P. SCHOENMAKER.

"The detection of methylamine in the presence of excess of ammonia." By P. A. VALTON.

"A new route to the 3-hydroxybenzopyrylium salts." By L. R. RIDGWAY and R. ROBINSON.

"The dissolution of substances in mixed liquids with special reference to colloids." By E. W. J. MARDLES.

"The hydroferrocyanides and hydroferricyanides of the organic bases. Part IV." By W. M. CUMMING.

"The carbonates of ethylene glycol and related compounds." By C. F. ALLPRESS and W. MAW.

"New halogen derivatives of camphor. Part IV. Action of hydroxylamine on α- and α′-chlorocamphor and bromocamphor." By H. BURGESS.

"New halogen derivatives of camphor. Part V. Action of sodium methoxide and ethoxide on αβ-dibromocamphor. Formation of esters of α-bromocampholenic acid." By H. BURGESS.

"The complexity of the solid state. The behaviour of pure phosphorus pentoxide. Part I." By A. SMITS and A. J. RUTGERS.

"The measurement of the vapour pressures of aqueous salt solutions by the freezing point of nitrobenzene." By N. V. SIDGWICK and E. K. EWBANK.

"Rotatory power and residual affinity." By D. H. PEACOCK.

"The solvent action of trialkyl trimethylene triamines on uric acid." By J. GRAYMORE.

"The rotatory dispersion of certain normal alkyl hexahydromandelates." By C. E. WOOD and M. A. COMLEY.

"Studies in electro-endosmosis. Part I." By F. FAIRBROTHER and H. MASTIN.

"Syntheses in the indole series. Part I." By W. O. KERMACK.

"Equilibrium across a parchment membrane in the case of sodium chloride in presence of sodium caseinate." By P. A. SPORING.

"Studies in the anthracene series. Part X." By E. DE B. BARNETT, J. W. COOK, and H. H. GRAINGER.

"Preparation of anilides and esters." By E. DE B. BARNETT and I. G. NIXON.

"Preparation of acid anhydrides." By E. DE B. BARNETT and J. W. COOK.

"Reduction products of arylidene cyanoacetic acids." By W. BAKER and A. LAPWORTH.

"γ-Hydroxystearic acid." By P. W. CLUTTERBUCK.

"Absorption spectra and molecular phases. Part IV." By E. C. C. BALY, R. A. MORTON, and E. ROGERS.

"Absorption spectra and molecular phases. Part V." By E. C. C. BALY, R. A. MORTON, and W. C. V. ROSNEY.

"The interaction between ethyl ethylidenemalonate and anilinophenylacetonitrile." By L. HIGGINBOTHAM, A. LAPWORTH, and C. SIMPSON.

"Ring-chain tautomerism. Part XI. The fluoresceins and rhodamines." By S. DUTT and J. F. THORPE.

"The system sodium carbonate–sodium sulphate–water." By W. A. CASPARI.

"The hydroferrocyanides and hydroferricyanides of the alkaloids." By W. M. CUMMING and D. G. BROWN.

"The reactions of sodium mono-, di-, and tri-sulphides with 1-chloro-2-nitro-, 1-chloro-4-nitro-, and 1:4-dichloro-2-nitro-benzenes." By H. H. HODGSON and J. H. WILSON.

"The action of sodium on the acetates of *m*- and *p*-cresol." By R. I. E. HALL.

"Derivatives of acridone and tetrahydrocarbazole." By W. H. LINNELL and W. H. PERKIN, jun.

"Tetrahydroacridine, octahydroacridine, and their derivatives." By W. H. PERKIN, jun., and W. G. SEDGWICK.

"The oxidation of the acetomesitylene with permanganate." By W. H. PERKIN, jun., and R. A. B. TAPLEY.

"The nitration of 2 : 3-dimethoxybenzaldehyde." By W. H. PERKIN, jun., R. ROBINSON, and F. W. STOYLE.

"The velocity of reaction in mixed solvents. Part VII. The influence of the base on the velocity of saponification of esters in methyl alcohol–water mixtures." By W. I. JONES, H. MCCOMBIE and H. A. SCARBOROUGH.

"The possibility of tautomerism depending on the mobility of a hydroxyl group. Part I. Open-chain triad systems." By M. D. FARROW and C. K. INGOLD.

"The relation between viscosity and surface tension." By R. K. SHARMA.

"2 : 6-Distyryl-pyridine and its derivatives." By B. D. SHAW.

"Limits for the propagation of flame in inflammable gas–air mixtures. Part I. Mixtures of air and one gas at the ordinary temperature and pressure." By A. G. WHITE.

"Organic derivatives of silicon." Part XXIX. Complex silicohydrocarbons, $(SiPh_2)_n$." By F. S. KIPPING.

"The resolution of *dl*-diphenylpropylenediamine and *dl*-1 : 4-diphenyl-2-methylpiperazine." By F. B. KIPPING and W. J. POPE.

"Pyridofluorene and some of its derivatives." By W. H. MILLS, W. H. PALMER, and M. G. TOMKINSON.

"Condensation of diphenylformamidine with phenols. Part II. The general nature of the reaction." By J. B. SHOESMITH and J. HALDANE.

"A method of measuring reduction potentials of quinhydrones." By E. BJILMANN, A. L. JENSEN, and K. O. PEDERSEN.

"Isomeric benzoyl derivatives from vinyldiacetonamine." By F. S. KIPPING and T. GREASLEY.

"The nitro-derivatives of *o*-cresol." By G. P. GIBSON.

"The preparation of quaternary hydrocarbons." By E. R. TROTMAN.

"The absorption spectra of various aldehydes and ketones and some of their derived compounds." By J. E. PURVIS.

"Investigations on the region of catalytic hydrogenation of unsaturated compounds." By S. V. LEBEDEW, G. G. KOBLIANSKY, and A. O. YAKOREBCHIK.

"Halogen-substituted 1-aryl-pyrazolones." By F. D. CHATTAWAY and C. R. N. STROUTS.

"Resolution of chlorosulphoacetic acid into its optically active components." By H. J. BACKER and W. G. BURGESS.

"The reactions of the unsymmetrical trinitrotoluenes." By O. L. BRADY, S. W. HEWETSON, and L. KLEIN.

"A relation between the heat of crystallisation and the surface tension of the saturated solution against the crystal." By L. SOEP.

"The partial formaldehyde vapour pressures of aqueous solutions of formaldehyde. Part I." By E. W. BLAIR and W. LEDBURY.

"Blue adsorption compounds of iodine. Part IV." By G. BARGER and F. J. EATON.

"Limits for the propagation of flame in inflammable gas-air mixtures. Part II. Mixtures of more than one gas and air at the ordinary temperature and pressure." By A. G. WHITE.

"Derivatives of aniline disulphoxide." By C. M. BERE and S. SMILES.
"The correlation of additive reactions with tautomeric change. Part IV. The effect of polar conditions on reversibility." By (MRS.) E. H. INGOLD.
"Periodicity, stratification, and Liesegang rings." By M. COPISAROW.
"Periodicity and stratified calcium carbonate." By M. COPISAROW.
"The law of periodicity." By M. COPISAROW.
"The influence of pressure on the temperature of crystallisation of *p*-nitrotoluene, *m*-dinitrobenzene, and guaiacol." By N. A. PUSHIN.
"Chemotherapy. Part I. Trypanocidal action and chemical constitution in the arylamides of *p*-aminophenylarsinic acid." By H. KING and W. O. MURCH.
"The rotatory dispersive power of organic compounds. Part XIV. Simple dispersion in methyl*cyclo*hexylidene-acetic acid." By E. M. RICHARDS and T. M. LOWRY.
"The oxidation of banded bituminous coal at low temperatures. Studies in the composition of coal." By W. FRANCIS and R. V. WHEELER.
"On the theory of adsorption of *Polanyi* and *Berenyi*." By L. SOEP.
"The spontaneous combustion of ethylene during the preparation of ethylene dichloride." By R. K. SHARMA.
"A new method for the determination of surface tension. Part I." By R. K. SHARMA.
"The action of chlorine on arsenic trioxide. Part I." By N. R. M. CRAIGIE.
"Studies on starch. Part II. The constitution of polymerised amylose and of amylopectin. The nature and the genesis of the stable dextrin and of the maltodextrins." By A. R. LING and D. R. NANJI.
"Aluminium amalgam as a reducing agent in the sugar series." By D. R. NANJI and F. J. PATON.
"Studies of electrolytic polarisation. Part I. The cathodic overvoltage of lead." By S. GLASSTONE.
"Amylene- and butylene-oxidic forms of tetramethyl galactose." By W. N. HAWORTH, D. A. RUELL, and G. C. WESTGARTH.
"Studies on starch. Part III. The nature of the amylo-hemicellulose constituent of certain starches." By A. R. LING and D. R. NANJI.
"A convenient method for the preparation of arsinic acids from the corresponding chloroarsines." By H. BURTON and C. S. GIBSON.
"Studies on the Walden inversion. Part IX. The influence of the solvent on the sign of the product in the conversion of β-bromo-β-phenylpropionic acids to β-hydroxy-β-phenylpropionamides." By G. SENTER and A. M. WARD.
"Studies in electro-endosmosis. Part II." By F. FAIRBROTHER.
"Solubility of bi-bivalent salts in solutions containing a common ion." By O. J. WALKER.
"The hydrolysis of acyl-chloroamines in water." By F. G. SOPER.
"Substitution in resorcinol derivatives. Part I. Nitration of some of the derivatives of β-resorcylic aldehyde." By M. G. S. RAO, C. SRIKANTIA, and M. S. IYENGAR.
"Total valency and molecular numbers." By F. J. TROMP.
"Compounds of tervalent molybdenum. Part II. Molybdenyl monochloride." By W. WARDLAW and R. L. WORMELL.
"An investigation of the behaviour of solid fuels during oxidation. Part I. Determination of (1) the relative tendencies to spontaneous ignition, (2) the relative thermal and combustible capacities." By B. MOORE and F. S. SINNATT.

"Transformation of mandelonitrile to mandelo*iso*nitrile." By C. E. Wood and H. S. Lilley.

"On the formation of a new dioxydiphenyl from resorcin." By B. Kubota, Y. Fujimura, and K. Akashi.

"Investigations on the dependence of rotatory power on chemical constitution. Part XXIV. Further experiments on the Walden inversion." By J. Kenyon, H. Phillips, and H. G. Turley.

"The formation of azoaniline sulphonic acids." By W. Lewcock.

"The action of amines on semicarbazones. Part II." By F. J. Wilson and A. B. Crawford.

"Organic derivatives of silicon. Part XXX. The action of mercuric oxide on diaryldichlorosilicanes." By L. R. Vyle and F. S. Kipping.

"Studies in valency. Part V. The mechanism of the Walden inversion." By T. M. Lowry.

"The separation and analysis of mixtures of *o*- and *p*-chloroacetanilides by sublimation." By A. E. Bradfield.

"A fractionating column with moving parts." By J. E. Myers and W. J. Jones.

"A reliable shaking machine." By A. G. Milligan.

"A by-product in the precipitation of chloropicrin." By L. Hunter and K. J. P. Orton.

"On fusain and its oxidation. Studies in the composition of coal." By F. V. Tideswell and R. V. Wheeler.

"A method of measuring the specific inductive capacity of liquids." By L. A. Sayce and H. V. A. Briscoe.

"The adsorption of catalytically poisonous metals by platinum. Part I. The adsorption of lead and mercury." By E. B. Maxted.

"A new theory of valency. Part I. An examination of Lowry's views on atomic binding." By I. Aucken.

"Organic compounds of arsenic. Part II. Derivatives of the arsenic analogue of carbazole." By J. A. Aeschlimann, N. D. Lees, N. P. McCleland, and G. N. Nicklin.

ADDITIONS TO THE LIBRARY.

I. *Donations.*

Acta Phytochimica. Vol. I., etc., Tokyo 1922–23 +. ill. (*Reference.*) From the Iwata Institute of Plant Biochemistry.

Allmand, Arthur John. The principles of applied electrochemistry. 2nd edition, revised and enlarged by the author and Harry Johann Thomas Ellingham. London 1924. pp. xii + 728. ill. 35*s*. net. (*Recd.* 30/9/24.)
From the Publishers: Messrs. Edward Arnold & Co.

Australian National Research Council. Australian Science Abstracts. Vol. I., etc. Sydney 1922 +. (*Reference.*)
From the National Research Council.

BERLINER, ARNOLD, and SCHEEL, KARL. [Editors.] Physikalisches Handwörterbuch. Berlin 1924. pp. vi + 904. ill. (*Reference.*) From the Publisher: Herr Julius Springer.

BLOCH, EUGÈNE. The kinetic theory of gases. Translated by PHILIP A. SMITH. London 1924. pp. xvi + 178. ill. 7*s*. net. (*Recd.* 19/7/24.) From the Publishers: Messrs. Methuen.

BOSE, CHUNI LAL. Scientific and other papers. Edited by JYOTI PROCASH BOSE. Vol. I. Calcutta 1924. pp. xxvi + 523. ill. (*Recd.* 1/7/24.) From Mr. J. P. Bose.

"CHEMICAL AGE" CHEMICAL DICTIONARY, The. Chemical terms. London 1924. pp. 158. (*Reference.*) 16*s*. net. From the Publishers: Messrs. Ernest Benn.

DALTON, JOHN. A new system of chemical philosophy. Part I. Manchester 1808. pp. viii + 220. ill. [To complete 2nd copy.] From Mr. H. H. Robinson.

DAVIS, ARTHUR CHARLES. A hundred years of Portland cement: 1824—1924. London 1924. pp. xxii + 282. ill. 21*s*. net. (*Recd.* 7/10/24.) From the Publishers: Messrs. Concrete Publications, Ltd.

DUMAS, J. B. La vie de Jean Baptiste [André] Dumas. 1800—1884. 1924. pp. 230. ill. [In mimeograph form.] (*Recd.* 27/8/24.) From the Author.

DUNSTAN, B. Industrial minerals: a review of occurrences, treatment, uses, values and production, with special reference to Queensland resources. Articles I to IX. Salt; asbestos; mica; molybdenite; platinum; nickel; graphite; manganese; arsenic. Brisbane 1920—1921. (*Queensland Geological Survey Publication* No. 268). pp. 340. From the Director.

EASTMAN KODAK COMPANY. Abridged scientific publications from the Research Laboratory. Vol. VII, 1923. New York 1924. pp. 140 + vi. ill. (*Reference.*) From the Director of Research.

EVANS, ULICK RICHARDSON. The corrosion of metals. London 1924. pp. xii + 212. ill. 14*s*. net. (*Recd.* 14/10/24.) From the Author.

FARADAY SOCIETY. The electronic theory of valency: a general discussion. London [1923]. pp. [iv + 96]. ill. 10*s*. 6*d*. net. (*Recd.* 4/7/24.) From Mr. N. F. Watterson.

GROGGINS, P. H. Aniline and its derivatives. London 1924. pp. viii + 256. ill. 18*s*. net. (*Recd.* 1/9/24.) From the Publishers: Messrs. Chapman & Hall.

HOLLINS, CECIL. The synthesis of nitrogen ring compounds containing a single hetero-atom [nitrogen]. London 1924. pp. 423. ill. 55*s*. net. (*Recd.* 10/9/24.) From the Publishers: Messrs. Ernest Benn.

Imperial Mineral Resources Bureau. The Mineral Resources of the British Empire and Foreign Countries. Statistics, 1919—1921. 52 parts. London 1923—1924.

—— —— Statistical summary. (Production, imports and exports) 1920—1922. London 1924. pp. 290. 8*s*. net.

—— Minerals of the Empire. British Empire Exhibition, Wembley 1924. London 1924. pp. 314. ill. 5*s*. net.

—— Report of the Governors on a proposed uniform method of recording mining and metallurgical statistics. London 1924. pp. 92. From the Director.

Institute of Brewing. Collective index of the Journal of the Institute of Brewing, 1911 to 1923. London 1924. pp. iv + 330. (*Reference.*) From the Institute.

Institution of Chemical Engineers. Transactions. Vol. I. 1923. London [1924]. pp. xvi + 120. ill. (*Reference.*) From the Institution.

Journal of Metabolic Research. Vol. II, etc., Morristown, N.J. 1922 +. (*Reference.*) From the Biochemical Society.

Lange, Otto. Chemisch-technische Vorschriften: ein Handbuch der speziellen chemischen Technologie insbesondere für chemische Fabriken und verwandte technische Betriebe enthaltend Vorschriften aus allen Gebieten der chemischen Technologie mit umfassenden Literaturnachweisen. 3rd edition. Vols. III and IV. Leipzig 1923—1924. pp. xx + 796, xxii + 750. (*Recd.* 18/8/24.) From the Publisher: Herr Otto Spamer.

Lodge, Sir Oliver. Atoms and rays: an introduction to modern views on atomic structure and radiation. London 1924. pp. 208. ill. 21*s*. net. (*Recd.* 12/7/24.) From the Publishers: Messrs. Ernest Benn.

Martindale, William Harrison, and Westcott, William Wynn. The extra pharmacopœia. 18th edition. Vol. I. London 1924. pp. xxxviii + 1164. (*Reference.*) 27*s*. 6*d*. net. From the Publishers: Messrs. H. K. Lewis & Co.

Monatsschrift für Kinderheilkunde. Vol. XXVIII, etc., Berlin 1924 +. (*Reference.*) From the Biochemical Society.

Ostwald, Wolfgang. [Editor.] Handbuch der Kolloidwissenschaft in Einzeldarstellungen. Vol. I. Lichte und Farbe in Kolloiden: eine phänomenologische Monographie. Part I. By Wolfgang Ostwald. Dresden 1924. pp. xiv + 556. ill. $7.60 net. (*Recd.* 19/7/24.) From the Publisher: Herr Theodor Steinkopff.

Oural. *Ecole Supérieure des Mines.* Annales. Vol. I. Ékathérinebourg 1918/19. ill. (*Reference.*) From Professor P. P. von Weimarn.

PARRISH, PERCY. The design and working of ammonia stills. London 1924. pp. 300. ill. 40*s*. net. (*Recd.* 22/7/24.)
From the Publishers : Messrs. Ernest Benn.

PORTER, HORACE CHAMBERLAIN. Coal carbonization. New York 1924. pp. 442. ill. (*Recd.* 1/9/24.)
From the Publishers : The Chemical Catalog Company, Inc.

SOCIETATEA ROMÂNĂ DE ŞTIINŢE. Buletinul de Chimie Pură şi Aplicată. Anul XXV, etc., Bucuresti 1922 +. (*Reference.*)
From the Society.

SOHON, JULIAN ARELL, and SCHAAF, WILLIAM L. A reference list of bibliographies : chemistry, chemical technology and chemical engineering published since 1900. New York 1924. pp. x + 100. 8*s*. net. (*Recd.* 18/8/24.)
From the Publishers : The H. W. Wilson Company.

THOMS, HERMANN. [Editor.] Handbuch der praktischen und wissenschaftlichen Pharmazie. Vol. I, part i. Vol. II, part i. Berlin 1924. pp. 320 + 6, 320. ill. (*Recd.* 18/8/24.)
From the Publishers : Herren Urban & Schwarzenberg.

VOGEL, J. H., and SCHULZE, ARMIN. Carbid und Acetylen als Ausgangsmaterial für Produkte der chemischen Industrie. Leipzig 1924. pp. 130. *Gmk.* 5 net. (*Recd.* 16/9/24.)
From the Publisher : Herr Otto Spamer.

WHETHAM, WILLIAM CECIL DAMPIER. Matter and change : an introduction to physical and chemical science. Cambridge 1924. pp. viii + 280. ill. 7*s*. 6*d*. net. (*Recd.* 7/7/24.)
From the Syndics of the Cambridge University Press.

WYCKOFF, RALPH W. G. The structure of crystals. New York 1924. pp. 462. ill. $6 net. (*Recd.* 27/8/24.)
From the Publishers : The Chemical Catalog Company, Inc.

II. *By Purchase.*

BERTHOUD, ALFRED. The new theories of matter and the atom. Translated from the French by EDEN [PAUL] and CEDAR PAUL. London 1924. pp. 260. ill. 10*s*. 6*d*. net. (*Recd.* 14/10/24.)

BEYER, OSKAR. Kontrolle und Herstellung von Saccharin. Part II. Handbuch der Saccharin-Fabrikation. Zurich 1923. pp. 144. ill. (*Recd.* 18/8/24.)

BUDGEN, NORMAN FREDERICK. Cadmium : its metallurgy, properties and uses. London 1924. pp. xvi + 240. ill. 21*s*. net. (*Recd.* 14/10/24.)

DAMMER, OTTO. [Editor.] Chemische Technologie der Neuzeit. 2nd edition. Edited by FRANZ PETERS. Vol. I, etc., Stuttgart 1924 +. (*Reference.*) ill.

DONATH, EDUARD, and BURIAN, OTTO. Die Kohlensuboxyde. (Sammlung, Vol. XXVII.) Stuttgart 1924.

DUSHMAN, SAUL. Production and measurement of high vacuum. Schenectady, N.Y. 1922. pp. xvi + 240. ill. 15*s*. net. (*Recd.* 24/7/24.)

GADAMER, JOHANNES. Lehrbuch der chemischen Toxikologie und Anleitung zur Ausmittelung der Gifte. 2nd edition. Göttingen 1924. pp. x + 714. ill. (*Recd.* 18/8/24.)

LANGE, OTTO. Chemisch-technische Vorschriften. 3rd edition. Vols. I and II. Leipzig 1923. pp. xxxvi + 1012, xx + 806. (*Recd.* 18/8/24.)

LEPESCHKIN, W. Kolloidchemie des Protoplasmas. Berlin 1924. pp. xii + 228. (*Recd.* 14/10/24.)

LONG, HAROLD C. Plants poisonous to live stock. 2nd edition. Cambridge 1924. pp. viii + 120. ill. 8*s*. 6*d*. net. (*Recd.* 23/7/24.)

LUCKIESH, M. Ultraviolet radiation: its properties, production, measurement, and applications. New York 1922. pp. xii + 258. ill. 21*s*. net. (*Recd.* 25/6/24.)

MARCUSSON, JULIUS, assisted by H. BURCHARTZ and G. DALÉN. Die natürlichen und künstlichen Asphalte. Leipzig 1921. pp. x + 262. ill. (*Recd.* 18/8/24.)

MYERS, VICTOR CARYL. Practical chemical analysis of blood. 2nd edition. London 1924. pp. 232. ill. 25*s*. net. (*Recd.* 18/3/24.)

NEUBURGER, MAXIMILIAN CAMILLO. Kristallbau und Röntgenstrahlen: mit besonderer Berücksichtigung der experimentellen Ergebnisse der Kristallstrukturforschung. (Sammlung, Vol. XXVII.) Stuttgart 1924. ill.

OSBORNE, THOMAS BURR. The vegetable proteins. 2nd edition. London 1924. pp. xiv + 154. ill. 9*s*. net. (*Recd.* 25/3/24.)

OSMOND, FLORIS. The microscopic analysis of metals. Edited by JOHN EDWARD STEAD. 3rd edition, revised and corrected by LEICESTER PHILIP SIDNEY. London 1924. pp. xviii + 314. ill. 10*s*. 6*d*. net. (*Recd.* 18/3/24.)

OSTWALD, WILHELM, and DRUCKER, CARL. [Editors.] Handbuch der allgemeinen Chemie. IV. Das Leitvermögen der Lösungen. By PAUL WALDEN. 3 parts. Leipzig 1924. pp. x + 384, vi + 346, vi + 397. ill. (*Reference.*)

OSTWALD, WOLFGANG, with the collaboration of PAUL WOLSKI and A. KUHN. Manipulations de chimie colloïdale. Translated from the 4th German edition by EDMOND VELLINGER. Paris 1924. pp. xviii + 202. ill. (*Recd.* 6/5/24.)

PENZER, N. M. Non-ferrous metals and other minerals. Resources of the Empire Series. Vol. VIII, part ii. London 1924. pp. 264. 21*s*. net. (*Recd.* 30/4/24.)

PHYSICAL SOCIETY OF LONDON. Report on radiation and the quantum-theory. By JAMES HOPWOOD JEANS. 2nd edition. London 1924. pp. iv + 86. 7*s*. 6*d*. net. (*Recd*. 24/6/24.)

PREGL, FRITZ. Quantitative organic microanalysis. Translated from the 2nd revised and enlarged German edition by ERNEST FYLEMAN. London 1924. pp. xvi + 190. ill. 12*s*. 6*d*. (*Recd*. 14/10/24.)

PRESCOTT, SAMUEL CATE, and WINSLOW, CHARLES-EDWARD AMORY. Elements of water bacteriology. 4th edition. New York 1924. pp. x + 212. 11*s*. 6*d*. net. (*Recd*. 13/5/24.)

PUMMERER, RUDOLF. Organische Chemie. 2nd edition. Dresden 1923. pp. xii + 210. (*Recd*. 18/8/24.)

REDGRAVE, GILBERT R., and SPACKMAN, CHARLES. Calcareous cements: their nature, manufacture and uses. 3rd edition. London 1924. pp. xvi + 396. ill. 25*s*. net. (*Recd*. 14/10/24.)

REICHE, FRITZ. The quantum theory. Translated by H. S. HATFIELD and HENRY L. BROSE. London 1922. pp. vi + 184. ill. 6*s*. net. (*Recd*. 24/6/24.)

RUSKA, JULIUS. Arabische Alchemisten. I. Chālid ibn Jazīd ibn Mu'āwija. Heidelberg 1924. pp. 56. (*Recd*. 18/8/24.)

SCHMID, ALFRED. Die Diffusionsgaselektrode. Stuttgart 1923. pp. 58. ill.

SIEGBAHN, MANNE. Spektroskopie der Röntgenstrahlen. Berlin 1924. pp. vi + 258. ill. (*Recd*. 11/6/24.)

SMITH, JAMES CRUICKSHANK. The manufacture of paint: a practical handbook. London 1924. pp. xvi + 306. ill. 12*s*. 6*d*. net. (*Recd*. 18/6/24.)

SNOW, E. C. Leather, hides, skins, and tanning materials. Resources of the Empire Series. Vol. VI. London 1924. pp. 368. 21*s*. net. (*Recd*. 30/4/24.)

STEPHENSON, W. TETLEY. Communications. Resources of the Empire Series. Vol. X. London 1924. pp. 180. 21*s*. net. (*Recd*. 30/4/24.)

TAMMANN, GUSTAV. Lehrbuch der heterogenen Gleichgewichte. Braunschweig 1924. pp. xii + 358. ill. (*Recd*. 11/6/24.)

TRESSLER, DONALD K. [and others]. Marine products of commerce: their acquisition, handling, biological aspects and the science and technology of their preparation and preservation. New York 1923. pp. 762. ill. 49*s*. 6*d*. net. (*Recd*. 13/5/24.)

TRIER, GEORG. Chemie der Pflanzenstoffe. Berlin 1924. pp. viii + 605. (*Recd*. 23/4/24.)

TUTTON, ALFRED EDWIN HOWARD. The natural history of crystals. London 1924. pp. xii + 288. ill. 15*s*. net. (*Recd*. 13/5/24.)

VÉZES, MAURICE, and DUPONT, GEORGES. Résines et térébenthines : les industries dérivées. Paris 1924. pp. 656. ill. (*Recd.* 18/8/24.)

VINAL, GEORGE WOOD. Storage batteries : a general treatise on the physics and chemistry of secondary batteries and their engineering applications. New York 1924. pp. viii + 402. ill. 22*s.* 6*d.* net. (*Recd.* 14/10/24.)

WALDEN, PAUL. Chemie der freien Radikale : Entwicklungsgang und gegenwärtiger Zustand der Lehre von den freien Radikalen. Leipzig 1924. pp. xiv + 352. ill. (*Recd.* 18/8/24.)

WALLIS-TAYLER, A. J. Sugar machinery : a descriptive treatise devoted to the machinery and processes used in the manufacture of cane and beet sugars. London 1924. pp. xvi + 410. ill. 12*s.* 6*d.* net. (*Recd.* 13/5/24.)

WARD, J. S. M. Textile fibres and yarns. Resources of the Empire Series. Vol. III. London 1924. pp. 192. 21*s.* net. (*Recd.* 30/4/24.)

WELLINGTON, STEPHEN NEWCOMBE, and COOPER, WILLIAM RANSON. Low temperature carbonisation. London 1924. pp. x + 238. ill. 25*s.* net. (*Recd.* 18/3/24.)

WOYTACEK, CARL. Lehrbuch der Glasbläserei : mit besonderen Abhandlungen über die Anfertigung der Aräometer, Barometer, Thermometer [usw]. Hamburg 1924. pp. xii + 280. ill. (*Recd.* 18/8/24.)

ANNUAL REPORTS, 1924, VOLUME XXI.

Fellows are reminded that applications for the Annual Reports for 1924 (Vol. XXI) must reach the Assistant Secretary not later than Monday, *December 1st*, 1924.

PROCEEDINGS

OF THE

CHEMICAL SOCIETY.

Ordinary Scientific Meeting, Thursday, November 6th, 1924, at 8 p.m., Professor W. P. WYNNE, D.Sc., F.R.S., President, in the Chair.

The following were formally admitted Fellows of the Chemical Society:

R. W. Harman, L. Micheli, W. J. U. Woolcock, F. B. Garner, H. Mastin, J. J. Etridge, F. M. Hamer, A. Ollé.

Certificates were read for the first time in favour of:

John Alfred Aeschlimann, B.A., M.Sc., A.I.C., Trinity College, Cambridge.
Reginald George Austin, A.I.C., 23, Exmoor Road, Southampton.
John Barritt, B.Sc., A.R.C.S., A.I.C., St. Andrew's Terrace, Cross Hills, Keighley.
Dorothy Marguerite Bennett, M.Sc., 45, Steade Road, Sheffield.
Henry Booth, B.A., Elmhurst, Aigburth, Liverpool.
Richard Parkinson Bothamley, B.Sc., Fernhurst, Gregory Boulevard, Nottingham.
Alfred Brandt, Thornhill Cottage, Bitterne, Hants.
Charles Edward Browne, B.Sc., Christ's Hospital, Horsham.
Peter George Carter, B.Sc., Chattan House, Abbotsford Crescent, St. Andrews.
William Charlton, B.Sc., 7, Honister Avenue, Jesmond, Newcastle-on-Tyne.
Kenneth Ernest Cooper, Stockeld Park, Wetherby, Yorks.
Reginald Murdin Drake, B.Sc., 12, Spinkfield Road, Birkby, Huddersfield.
Robert Singleton Furness, Mimosa, Weston Park, Thames Ditton.
Richard Gane, Chestwheel Farm, Summerseat, Manchester.
George Euan Gardam, B.Sc., A.R.C.S., 10, Cosbycote Avenue, Herne Hill, S.E. 24.
Richard Frank Goldstein, B.Sc., 92, Dartmouth Road, Cricklewood, N.W. 2.
Herbert Frank Halliwell, 14, Guernsey Grove, Herne Hill, S.E. 24.
Cyril Charles Harris, B.Sc., A.R.C.S., 13, Waverley Grove, Southsea.
John Harvey, B.Sc., 38, Carlton Road, Putney Hill, S.W. 15.
Frederick Hayter, Skin Hospital, Blackfriars Road, S.E. 1.
Harry Holness, The Vineries, Ash, Canterbury.
Margaret Elizabeth John, Sandy, Beds.
Thomas Alfred Jones, B.Sc., School House, East Hoathley, Sussex.
Maud Winifrede Kilroy, B.Sc., Brooklyn Hotel, Earl's Court Square, S.W. 5.
Eric Silvester Kreis, A.R.C.S., 23, Queen's Gate Gardens, S.W. 7.
Subramonia Krishnamurti, B.Sc., 118, Belsize Road, Kilburn, N.W. 6.

Donald Ernest Ladhams, Brook Villa, Shirley Warren, Southampton.
Enid Lakeman, Bedford College, Regent's Park, N.W. 1.
Humphrey Desmond Murray, B.A., 26, Stonor Road, Kensington, W. 14.
Bindiganavale Tirumalachar Narayanan, B.A., 28, Eardley Crescent, Earl's Court, S.W. 5.
Claude Edward Courtenay Nicholls, Yarmouth, Isle-of-Wight.
John Henry Nutland, B.Sc., A.R.C.S., 68, Stonhouse Street, Clapham, S.W. 4.
George Osborn Parrott, 67, Mortlake Road, Kew Gardens.
Stanley Peat, B.Sc., East Hetton Colliery, Coxhoe, Durham.
Hilda Mary Perry, B.Sc., Wolseley, Woodside Park, N. Finchley, N. 12.
Rudolph Albert Peters, M.A., M.D., Department of Biochemistry, Oxford.
Edward William Plowman, 8, Halliford Street, Canonbury, N. 1.
Ronald Herbert Purcell, B.Sc., A.R.C.S., 25, Windmill Street, Gravesend.
Henry George Rees, 21, Park Road, Harlesden, N.W. 10.
Sydney William Ellis Roberts, 4, Sellons Avenue, Harlesden, N.W. 10.
Percy Harry Robinson, M.C., B.Sc., A.I.C., 38, Leyland Road, Lee, S.E. 12.
William Robinson, 18, Chapel Lane, Headingley, Leeds.
Robert Roger, B.Sc., Ph.D., 243, Strathmartine Road, Dundee.
John Ross, B.Sc., A.R.C.S., 29, Warriner Gardens, Battersea, S.W. 11.
Samuel Lamplough Scott, 37, Chatsworth Road, Bournemouth.
Arthur Charles Shill, 8, Judd Road, Tonbridge.
Isobel Agnes Smith, M.A., B.Sc., Ph.D., 2, Seafield Place, Broughty Ferry.
Philip Hugh Payne-Smith, 22, Wallbutton Road, Brockley, S.E. 4.
Roland Wilfred John Smith, B.Sc., London House, High Street, Felixstowe.
Ettie Stewart Steele, M.A., B.Sc., Ph.D., University Hall, St. Andrews.
Frank Sykes, 11, Upper Price Street, York.
Kenneth Vivian Thimann, B.Sc., A.R.C.S., 28, Manor Drive, Wembley Park.
Mitchell Graham Thomson, B.Sc., 63, Manor House Road, Jesmond, Newcastle-on-Tyne.
Gordon Edward Watts, B.A., Belmont, Radcliffe Road, Croydon.
Edgar Winterbottom, B.Sc., Dunheved College, Launceston.

The following papers were read :

"Investigations on the dependence of rotatory power on chemical constitution. Part XXIV. Further experiments on the Walden inversion." By J. KENYON, H. PHILLIPS, and H. G. TURLEY.

"Studies of valency. Part V. The mechanism of the Walden inversion." By T. M. LOWRY.

"A spectroscopic study of the luminescent oxidation of phosphorus." By H. J. EMELÉUS and W. E. DOWNEY.

"The adsorption of catalytically poisonous metals by platinum. Part I. The adsorption of lead and mercury." By E. B. MAXTED.

Ordinary Scientific Meeting, Thursday, November 20th, 1924, at 8 p.m., Professor W. P. WYNNE, D.Sc., F.R.S., President, in the Chair.

The PRESIDENT referred to the loss sustained by the Society, through death, of the following Fellows :

	Elected.	Died.
Robert Hellon	June 3rd, 1875.	Nov. 9th.
Robert William Murray Thomson	Feb. 16th, 1922.	Nov. 5th.

The PRESIDENT made the following announcements:

1. A meeting of the Faraday Society will be held here on Tuesday, December 9th, at 4.30 p.m., when a group of papers on the "Base Exchange in Soils" will be read, the introductory lecture being given by Dr. D. J. Hissink, of Groningen, Holland. Fellows of the Chemical Society are invited to attend this Meeting and will also be welcomed at an Informal Dinner to be held at the Criterion Restaurant at 8 p.m. The price of the tickets will be 6*s.* 6*d.* (to be paid at the dinner), and those desiring to attend must notify the Secretary of the Faraday Society, 90, Great Russell Street, W.C.1., a few days before the Meeting.

2. Fellows are reminded that application for the Annual Reports for 1924, Volume XXI (price 5*s.* 6*d.*) must be made to the Assistant Secretary. The time by which applications must be received has been extended to Christmas Day, 1924.

3. The Council has decided that each author or joint author shall receive 10 reprints of his paper free of charge, but that such reprints shall be issued without wrapper. If authors desire to receive their reprints in wrappers they should notify the Editor when returning proofs that they are willing to pay the extra cost.

4. The attention of Authors is directed to Regulation No. 2 regarding Scientific Communications submitted to the Society stating that:

> "No paper can be included in the list of Scientific Communications to be brought before a Meeting of the Society unless received by the Secretaries by the Thursday previous to the day of meeting. All papers should be accompanied by a separate *précis*—not exceeding in general 250 words—setting out the broad results of the investigation."

The Council has decided that, in future, no paper can be read at a meeting unless the paper itself is in the hands of the Secretaries.

The Council has also made the following addition to the above Regulation:

> "Every Author is requested to submit typescript in double-line spacing; if this is not possible, the manuscript must be submitted in a form easily legible."

5. The following letter has been received from the President of

the newly-formed Indian Chemical Society, Sir Prafulla Rây, in reply to the Council's telegram of congratulation:

INDIAN CHEMICAL SOCIETY

92, Upper Circular Road,
Calcutta (India).
October 23, 1924.

Dear Prof. Wynne,

I thank you very much for your telegram dated the 17th instant. I need scarcely assure you how highly we value the congratulations and warm wishes of yourself and the Council of the Chem. Soc., which we shall always look upon as the parent Society. The *J.C.S.* has hitherto been the only organ of chemists throughout the British Empire, and the Publication Committee have been hard put to it to find space for the ever-increasing number of communications and have often been under the necessity of appealing to authors of papers to abridge them as far as possible. This will explain the necessity of founding the Indian Chemical Society with an organ of its own.

More than 40 years ago, while a student at Edinburgh, I almost dreamt a dream that, God willing, a time would come when modern India would also be in a position to contribute her quota to the world's stock of scientific knowledge, and it has been my good fortune to see my dream materialised. I have shown in my "History of Hindu Chemistry" that this branch of science was zealously pursued in ancient India and I have now the satisfaction of finding chairs of chemistry in most Universities of India filled by my own pupils, who have also been regular contributors to the *J.C.S.*

It will always be our endeavour to maintain cordial, nay filial relationship with the parent Society, whose inspiration we shall always highly prize. I can scarcely suppress my feelings which arise in me as I am penning these lines. My mind naturally travels back to the memorable Feb. 23, 1841, when the original members met for the purpose of taking into consideration the formation of the London Chemical Society. I have further the gratification to remember that of the original members of the London Chemical Society, I had the good fortune of knowing Lord Playfair (who represented Edinburgh

University for some time), to whom I was introduced by my revered teacher, Crum Brown.

Thanking you once more for your good wishes.

I remain,

Yours very truly.

(*Signed*) P. C. RÂY.

Prof. W. P. WYNNE, D.Sc., F.R.S.,
President, Chemical Society,
Burlington House,
Piccadilly, London.

Certificates were read for the first time in favour of :

Julius Nicholson Ashley, B.Sc., A.I.C., 37, Scarsdale Road, Victoria Park, Manchester.
Vincent Bloomer, B.Sc., 33, Balfour Street, Oldham.
Percy Chorley, M.Sc., 87, Hazelbottom Road, Crumpsall, Manchester.
William Haughton Crowe, Bettwsville, Cherry Valley Park, Belfast.
Harry Julius Emeléus, B.Sc., A.R.C.S., 4, Oakley Crescent, Chelsea, S.W. 3.
Richard Greenhalgh, B.Sc., 139, Stuart Street, Clayton, Manchester.
David Hughes, 18, Holmes Grove, Westbury-on-Trym, Bristol.
Kathleen Harriet Hughes, 8, Ormiston Drive, Knock, Belfast.
Bertram Hobart Ingham, B.Sc., Yew Bank, Langham Road, Bowdon.
Raymond James Wood Le Fevre, 17, Broadway Avenue, St. Margarets.
Frederick William Liley, 41, Beaconsfield Road, West Croydon.
James Gilbert Lunt, B.Sc., c/o Anglo South American Meat Co., San Martin, 235, Buenos Aires.
Vincent Mark Mascarenhas, B.A., Indian Institute of Science, Bangalore.
Thomas Webster Parker, A.R.C.S., Mildenhall, Suffolk.
William Samuel Payne, Moseley House, Rounds Green, Oldbury.
Kenneth John Pierson, 105, Winterbourne Road, Thornton Heath.
Douglas Victor Plumbridge, Ph.D., A.R.C.S., A.I.C., 21, Heathfield Road, Wavertree, Liverpool.
William Joseph Victor Ward, B.A., 41, Marlowe Road, Cambridge.
Alan Douglas Whitehead, B.Sc., 90, West Hill, Putney, S.W. 15.
Victor Emmanuel Yarsley, B.Sc., A.I.C., The View, Highfield, Chasetown, Nr. Walsall.

The following Certificate has been authorised by the Council for presentation to ballot under Bye-Law I (2) :

Sadashiva Parashuram Nair, Ph.G., Nair Building, Lamington Road, Bombay.

The following papers were read :

"The sulphur compounds of Kimmeridge shale oil. Part I." By F. CHALLENGER, J. R. A. JINKS, and J. HASLAM.

"The interaction of thiocyanogen and of hydrogen sulphide with unsaturated compounds. Part II." By F. CHALLENGER and T. H. BOTT.

"A new method for the preparation of 9-alkyl carbazoles." By H. BURTON and C. S. GIBSON.

"The behaviour of the simple halides with water." By N. V. SIDGWICK.

"A synthesis of pyrylium salts of anthocyanodin type. Part V. The synthesis of cyanidin chloride and of delphinidin chloride." By D. D. PRATT and R. ROBINSON.

"Experiments on the synthesis of certain higher aliphatic compounds. Part I. A synthesis of lactarinic acid and of oleic acid." By G. M. ROBINSON and R. ROBINSON.

"A synthesis of myricetin and of galangin monomethyl ether occurring in galanga root." By J. KALFF and R. ROBINSON.

List of papers, or Abstracts thereof, received between October 17th and November 20th, 1924. (This list does not include the titles of papers which have been read at a Scientific Meeting, or which have appeared in the Journal.)

"Substituted carbonates derived from para-cresol." By R. H. GRIFFITH.

"Banded bituminous coal. Studies in the composition of coal." By F. V. TIDESWELL and R. V. WHEELER.

"Reactions of thiosemicarbazones. Part III." By F. J. WILSON and R. BURNS.

"New syntheses of arylazoaldoximes." By T. K. WALKER.

"Studies of electrolytic polarisation. Part II. The cathodic overvoltage of mercury." By S. GLASSTONE.

"The molecular weight of cholesterol." By J. R. PARTINGTON.

"The chemistry of lignin. Part II. A comparison of lignins derived from various woods." By W. J. POWELL and H. WHITTAKER.

"The explosion of acetylene and nitrogen. Part IV. Spectra of explosions of gases containing hydrogen, carbon, nitrogen, and oxygen." By W. E. GARNER and S. W. SAUNDERS.

"An *X*-ray investigation of the lower members of the fatty acid series." By R. E. GIBBS.

"The orientation of derivatives of triphenylphosphine oxide and the action of halogens on arylsilicanes and arylbismuthines." By F. CHALLENGER and J. F. WILKINSON.

"2-Methyl- and 2 : 4-dimethyl-quinolino-6 : 5-α-pyrones." By B. B. DEY, I. SARKAR, and T. SESHADRI.

"A comparison between the homogeneous thermal decomposition of nitrous oxide and its heterogeneous catalytic decomposition on the surface of platinum." By C. N. HINSHELWOOD and C. R. PRITCHARD.

"The system zinc sulphate–water." By C. R. Bury.

"The preparation of pure methyl alcohol." By H. B. Hartley and H. R. Raikes.

"The condensation of phenylethylamine with chloromethyl alcohol." By W. F. Short.

"The ignition of gases. Part V. Ignition by inductance sparks. Mixtures of the paraffins with air." By R. V. Wheeler.

"An attempt to separate the isotopes of bromine by fractional crystallisation of ammonium bromide, and a redetermination of the atomic weight of bromine." By P. L. Robinson and H. V. A. Briscoe.

"Chemical affinity and electronic structure. Part II. The polar link." By B. H. Wilsdon.

"Dimethyl- and tetramethyl-butadiene." By A. D. Macallum.

"The addition of malonic ester to anils." By E. J. Wayne and J. B. Cohen.

"The direct combination of ethylenic hydrocarbons with hydrogen sulphites." By I. Kolker and A. Lapworth.

"New synthesis of the meconines." By G. A. Edwards, W. H. Perkin, and F. W. Stoyle.

"Basic slags and rock phosphates." By E. Vanstone.

"The α- and β-naphthalenesulphonylalanines." By W. M. Colles and C. S. Gibson.

"The periodic sphere and the position of the rare earth metals." By J. A. N. Friend.

"The constitution of disulphoxides. Part II." By C. J. Miller and S. Smiles.

"αγ-Dialdehydopropane-ββ-dicarboxylic acid and αγ-dialdehydopropane-β-carboxylic acid." By W. H. Perkin and H. S. Pink.

"The influence of nitrogen dilution on the speed of flame." By O. C. de C. Ellis.

"Reactions of displacement in the tropic acid group. Part I." By A. McKenzie and R. C. Strathern.

"The action of light on the ferrous ferric iodine iodide equilibrium." By E. K. Rideal and E. G. Williams.

"The action of bromine on sodium and silver azides." By D. A. Spencer.

"Researches on residual affinity and co-ordination. Part XXIII. Interactions of trimethylstibine and platinic and palladous chlorides." By G. T. Morgan and V. E. Yarsley.

"Physostigmine (eserine). Part III." By E. Stedman and G. Barger.

"New halogen derivatives of camphor. Part VI. β-Bromo-

camphor-α-sulphonic acid." By H. BURGESS and T. M. LOWRY.

"New halogen derivatives of camphor. Part VII. The constitution of the Reychler series of camphorsulphonic acids. Experiments on chlorosulphoxides." By H. BURGESS and T. M. LOWRY.

"Fission of the pyridine nucleus during reduction. Part II. The preparation of glutaraldehydedioxime." By B. D. SHAW.

"The hydrolytic decomposition of phosphorus trichloride." By A. D. MITCHELL.

"The use of fused borax in the determination of the atomic weight of boron." By H. V. A. BRISCOE, P. L. ROBINSON, and G. E. STEPHENSON.

CERTIFICATES OF CANDIDATES FOR ELECTION AT THE BALLOT TO BE HELD AT THE ORDINARY SCIENTIFIC MEETING ON THURSDAY, DECEMBER 4TH, 1924.

N.B.—The names of those who sign from "General Knowledge" are printed in *italics*.

AESCHLIMANN, JOHN ALFRED, Trinity College, Cambridge. British. Chemist. Asst. Demonstrator, Univ. Laboratories. Sub-lector of Trinity College. B.A., M.Sc. (Cantab.), B.Sc. (Lond.), A.I.C. Late Senior Scholar of Trinity College. Joint author of papers in *J.C.S.* (*Signed by*) N. P. McCleland, H. R. Stevens, F. G. Mann.

AUSTIN, REGINALD GEORGE, 23, Exmoor Rd., Southampton. English. Student at Battersea Polytechnic. A.I.C. From Oct. 1919 to June 1924 full-time student of chemistry and allied subjects under Professor D. R. Boyd. (*Signed by*) D. R. Boyd, J. Kenyon, J. L. White, Harold Hunter.

BADIA, MOSTAFA, 6, First Avenue, Selly Park, Birmingham. Egyptian. Student of Chemistry; wanting to keep in touch with the progress in chemistry and its literature. (*Signed by*) G. T. Morgan, Wm. Wardlaw, C. E. Wood.

BALABAN, ISIDORE ELKANAH, 72, Parkhill Rd., Hampstead, N.W. 3. British. Research Chemist. Demonstrator, College of Technology, 1920–1921. Research Assistant to Professor of Technological Chemistry, Manchester University, 1921–1924. Publications: Balaban and Pyman, *Trans. Chem. Soc.*, 1922, **121**, 947; Balaban and Pyman, *Trans. Chem. Soc.*, 1924, **125**, 1564. (*Signed by*) Harold King, H. W. Dudley, Frank Lee Pyman.

BARNES, REGINALD FURLONG, 75, Swinderby Road, Wembley. British. Student. Associate of Royal College of Science. (*Signed by*) G. A. R. Kon, M. A. Whiteley, E. H. Farmer.

BARRATT, SYDNEY, 39, St. Michael's Road, Headingley, Leeds. British. Assistant Lecturer in Chemistry, University of Leeds. B.A. (Oxon). (*Signed by*) Alan F. Titley, W. H. Perkin, Fred. A. Mason, N. V. Sidgwick.

BARRITT, JOHN, St. Andrew's Terrace, Crosshills, via Keighley. British. Research Chemist to the British Research Association for the Woollen and Worsted Industries. A.R.C.S., 1923, B.Sc. (Hons.), 1923. Research in Physical Chemistry, 1923–24. A.I.C., 1924. (*Signed by*) Christopher Ingold, Frank R. Goss, James C. Philip.

BATTERSBY, THOMAS CHARLES, 14a, Prospect Road, St. Albans. British. Chemist (St. Albans Gas Coy.). Chemistry of Gas Manufacture, Purification, etc. (*Signed by*) John W. Heath, Percy Edgerton, James H. Gardiner, William T. Burgess.

BENNETT, DOROTHY MARGUERITE, 45, Steade Road, Sheffield. English. Assistant Lecturer in Chemistry, University of Sheffield. M.Sc. (Sheffield). (*Signed by*) W. P. Wynne, Arthur W. Crossley, M. A. Whiteley.

BEVAN, ERIC ALBERT, 90, Wickham Rd., Brockley, S.E. 4. British. Chemist. B.Sc. Assistant to Professor H. E. Armstrong. (*Signed by*) Henry E. Armstrong, E. E. Turner, J. R. Partington.

BOOTH, HENRY, Elmhurst, Aigburth, Liverpool. British. At present learning methods of business with Booth Steamship Co. 1st Class Honours, Chemistry, Oxford, 1924. Part author of a paper published in the *J.C.S.*, 1920. I wish to keep in touch with what is going on in Chemistry while not engaged in scientific work. (*Signed by*) E. J. Bowen, H. R. Raikes, H. Hartley.

BOTHAMLEY, RICHARD PARKINSON, "Fernhurst," Gregory Boulevard, Nottingham. British. Chemist. I have been engaged in the study of Chemistry at University College, Nottingham, for more than ten years. During the war, being unfit for military service, I assisted Prof. F. S. Kipping in chemical work for the Ministry of Munitions for 3½ years. I hold the B.Sc. Hons. Degree (in Chemistry) of London University. (*Signed by*) F. Stanley Kipping, E. B. R. Prideaux, J. B. Firth, F. C. Laxton.

BOWRAN, WILLIAM NORMAN, 257, Prince Consort Road, Gateshead-on-Tyne. British. Chief Chemist and Assistant Works Manager, Messrs. Robt. Bowran & Co., Ltd., 4, St. Nicholas Buildings, Newcastle-on-Tyne. Educated at Northern Polytechnic Institute, Holloway, London, N. Served 5 years' apprenticeship under indentures with Messrs. Wilkinson, Heywood & Clark. Chemistry, Mathematics and Physics at Polytechnic Institute, Regent Street, W. Distinction and 1st Class Certificates in Chemistry. 1st Class Cert. of City and Guilds of London Institute in manufacture of painter's oils, colours, and varnishes. Member of Oil and Colour Chemists' Association. Present occupation includes supervision of paints manufacture, investigations and researches on new products and the general control of analytical work in paints lab. together with analyses of non-ferrous metals and alloys for Foundry Dept. (*Signed by*) J. Newton Friend, Wm. H. Simmons, John Senior.

BRADFIELD, ALAN EDWIN, 1, Garth Hill Cottages, Bangor, N. Wales. British. Research Worker. 1st Class Hons. Degree in Chemistry (B.Sc.), 1922. Oct. 1922–Sept. 1924, Research work with grant, as a "Student in training," from Scientific and Indust. Res. Board. At present engaged on Research, with grant, as a "Research Worker" from the Scientific and Indust. Res. Board. All the above under the supervision of Prof. K. J. P. Orton, F.R.S., at the Univ. College of N. Wales, Bangor. (*Signed by*) Kennedy Orton, F. G. Soper, H. B. Watson, L. Hunter.

BRANDT, ALFRED, Thornhill Cottage, Bitterne, Hants. British. Undergraduate studying Chemistry. Intermediate B.Sc. (Lond.). Passed B.Sc. Physics subsidiary to B.Sc. (Hons.) Chemistry. 3 Years full-time Student

at University College, Southampton. Assistant for 6 months in Chem. Labs. of the Research Laboratories of the General Electric Co. (*Signed by*) D. R. Boyd, William Singleton, Howell Williams.

BRITTON, FRANK WALTER, "Glenroy," 30, Frederick Rd., Wylde Green, Birmingham. English. Electro-chemist. Electrolytic Processes and Metallic Deposition. Former day student at the Municipal Technical School in Chemistry, certificate Junior College of Preceptors, English, Chemistry, Magnetism and Electricity. At present engaged upon a new chemical bronze process for electroplating trade. (*Signed by*) Lionel M. Jones, W. W. Sirman, C. J. V. Bews.

BROWNE, CHARLES EDWARD, Christ's Hospital, Horsham, Sussex. British. Science Master. B.Sc. London (in Chemistry, Physics, and Geology). Senior Science Master, Christ's Hospital, 1899 to present time. Research Student in Chemistry at Central Technical College, 1897–98. Head of Chemistry Dept. of the Robert Gordon College, Aberdeen, 1898–1899, etc. (*Signed by*) James C. Philip, H. B. Baker, T. M. Lowry.

BYRNE, GEORGE THOMAS, 4, University Path, The University, Hongkong. British. Professor of Chemistry, The University, Hongkong. M.Sc. (Vict.), A.I.C. (*Signed by*) Robert H. Pickard, F. C. Ray, H. G. Turley, Harold Hunter.

CARTER, PETER GEORGE, B.Sc. (Sydney), Chatham House, Abbotsford Cres., St. Andrews, Scotland. British. Research student. For one year Demonstrator in Organic Chemistry, Sydney University. Science Research Scholar of Sydney University. Science Research Scholar of the Royal Commissioners for the Exhibition of 1851. Part author of "Researches on Phellandrenes, Part II," published in the Transactions of the Chemical Society, 1924, **125**, 930. (*Signed by*) John Read, J. C. Irvine, G. M'Owan.

CHARLTON, WILLIAM, 7, Honister Avenue, Jesmond, Newcastle-on-Tyne. British. Research Student. B.Sc., 1st Class Honours (Chemistry), Armstrong College, University of Durham. (*Signed by*) W. N. Haworth, G. C. Leitch, C. F. Allpress, W. Maw.

CLARE, THOMAS HENRY, 41, Maddox St., Bond St., W. 1. British. Student of Chemistry at Birkbeck College. (*Signed by*) Samuel Sugden, F. Barrow, F. P. Dunn.

COOPER, KENNETH ERNEST, Stockeld Park, Wetherby, Yorks. English. Student in 4th year, reading for Hons. B.Sc. at Leeds University. (*Signed by*) C. K. Ingold, P. K. Dutt, M. S. Leslie, H. M. Dawson.

CORRINGHAM, FRANCIS ERNEST, 4, Gordon Road, Sevenoaks. British. Pharmacist and Research Chemist. Scientific Chemist to Dr. Bengue & Co., London. Registered Chemist and Druggist. Member of the Pharmaceutical Society of Gt. Britain. Late Demonstrator (Chemistry), London College of Pharmacy. Scientific Adviser on Medical Hydrology, Vittel Spa (France). (*Signed by*) Frank Radcliffe, Thos. R. Owles, S. Gray Fenton.

DRAKE, REGINALD MURDIN, 12, Spinkfield Rd., Birkby, Huddersfield. British. Student at the University, Leeds. B.Sc., now reading for M.Sc. and A.I.C. at the University, Leeds. (*Signed by*) R. Whytlaw Gray, H. M. Dawson, C. K. Ingold, P. K. Dutt, W. Lowson, W. A. Wightman.

FLINT, COLIN FALCONER, 41, Priory Road, Hornsey, N. 8. British. Research Student at Royal College of Science. B.Sc., 1st Class Hons., Lond. to be awarded on completion of session 1924–1925 post-graduate work. A.R.C.S., 1st Class. (*Signed by*) H. B. Baker, M. A. Whiteley, H. F. Harwood.

FRASER, RONALD GEORGE JUTA, 65, Beaconsfield Place, Aberdeen. British. Research Student in Physical Chemistry. B.Sc. (March 1924), University

of Aberdeen, Special Distinction in Natural Philosophy and Chemistry Author, or part author in conjunction with Dr. Thomas and Dr. Humphries, of papers published in the Transactions and Philosophical Magazine. (*Signed by*) Alex. Findlay, T. Harold Reade, J. E. Humphries.

FURNESS, ROBERT SINGLETON, "Mimosa," Weston Park, Thames Ditton. English. Metallurgist, "A.C." Motors, Ltd. London Matriculation, 1st Class. Studied under J. B. Hoblyn, F.I.C. Chemist and Metallurgist to Vauxhall Motors, Luton, Bedfordshire. Metallurgist to Gillett Stephens & Co., Ltd., Bookham, Surrey. Course of instruction Inorganic and Organic Chemistry under Professor Coleman, S.W. Polytechnic, Chelsea. Studied Analytical Chemistry and Metallurgy under Professor Naish, S.W. Polytechnic. (*Signed by*) Frank Radcliffe, Thos. H. Hamnett, Thos. R. Owles.

GANE, RICHARD, Chestwheel Farm, Summerseat, nr. Manchester. English. Student reading for Hons. B.Sc. in Chemistry at Leeds University, final year. (*Signed by*) H. M. Dawson, R. Whytlaw Gray, C. K. Ingold, P. K. Dutt, W. Lowson.

GARDAM, GEORGE EUAN, 10, Cosbycote Avenue, Herne Hill, S.E. 24. British. Student. Research Student at the Royal College of Science. A.R.C.S., 1st Class, B.Sc. (London), 1st Class. (*Signed by*) James C. Philip, H. B. Baker, H. J. T. Ellingham.

GARNER, WALTER BRENDON, 307/13, Murray Street, Perth, Western Australia. Australian. Chemist to Messrs. F. H. Faulding & Co., of Adelaide and Perth, Australia. Desires to keep in touch with current chemical research and literature. (*Signed by*) Ernest J. Parry, Francis Ransom, M. S. Salamon.

GOLDSTEIN, RICHARD FRANK, 92, Dartmouth Rd., Cricklewood, N.W. 2. British. Student. B.Sc. (1st Class Hons. Chemistry), Oct. 1923; since then engaged in research work at University College, London. (*Signed by*) O. L. Brady, J. N. Collie, J. N. E. Day.

GREENE, HERBERT (M.C.), Gezira Research Farm, Wad Medani, Sudan. British. Asst. Govt. Chemist, Sudan (just appointed). B.Sc. St. Andrews, 1921; Maths., Nat. Phil., Chemistry, Special Distinction in the last. Ph.D. St. Andrews, 1924. Carnegie Scholar, 1921–1923. Carnegie Fellow, 1923–1924. Taking up appointment as Assistant Government Chemist, Sudan. Joint publication with Prof. R. Robinson, F.R.S., in *J.C.S.* for 1922. (*Signed by*) Robert Robinson, Jocelyn Thorpe, Robert Robertson.

GRIFFIN, KENNETH MASSY, Auckland, New Zealand. British. Government Analyst, Auckland. M.Sc. (N.Z.). 1st Class Honours in Chemistry. Joint author of paper on "Adsorption and Constitution" about to be submitted for publication. Eight years in Dominion Laboratory, New Zealand. (*Signed by*) J. S. Maclaurin, B. C. Aston, P. W. Robertson, A. H. Bowell.

HALLIWELL, HERBERT FRANK, 14, Guernsey Grove, Herne Hill, London, S.E. 24. British. University Undergraduate. Student in Chemistry at East London College. (*Signed by*) J. R. Partington, E. E. Turner, B. D. Shaw.

HARRIS, CYRIL CHARLES, 13, Waverley Grove, Southsea. British. Student (Research) at Royal College of Science, London. B.Sc. (London), A.R.C.S. (London) (in Chemistry). Student at the R.C.S. since 1921. (*Signed by*) R. W. West, M. B. Donald, H. F. Harwood.

HARRISON, HAROLD AINSWORTH, Bobbin Hall, Blackrod, nr. Chorley, Lancs. British. Research Student. I graduated at Manchester University in 1922 with First Class Honours in Chemistry. M.Sc. in 1923. Have con-

ducted two years' research on the amino- and nitro-naphthoic acids. Am at present a candidate for Ph.D. No published work as yet. (*Signed by*) Arthur Lapworth, Robert Robinson, Ernest Chapman, Wilson Baker.

HARRISON, PHILIP WILLIAM BENSON, 140, Stapleton Hall Rd., N. 4. British. Chemical Research Student at Battersea Polytechnic. B.Sc. (London), 1st Class Honours in Chemistry. (*Signed by*) J. Kenyon, Harold Hunter, Robert H. Pickard.

HARVEY, JOHN, 38, Carlton Rd., Putney Hill, London, S.W. 15. British. Research Chemist. B.Sc. Hons. Chem., Manchester. Employed on research work for two years since taking degree. (*Signed by*) Arthur Lapworth, J. E. Myers, Henry Stephen, Frederick Challenger, Colin Campbell.

HAYTER, FREDERICK, Skin Hospital, Blackfriars Rd., S.E. English. Superintendent Skin Hospital, S.E., Blackfriars. Inorganic Chemistry, Stages 1, 2 and 3. Organic Chemistry, Stages 1 and 2, Theoretical and Practical, S. Kensington Sci. and Art. Demonstrator in Chemistry, Regent St. Polytechnic and Shoreditch Technical Institute under Professor Nunn. (*Signed by*) Frank Radcliffe, Thos. H. Hamnett, Thos. R. Owles.

HEPBURN, IAN, Polwartha Rock, Wadebridge, Cornwall. English. Student at Oxford University. B.A. Oxon. (Chemistry). (*Signed by*) N. V. Sidgwick, D. Ll. Hammick, S. G. P. Plant, E. Hope.

HODGSON, THOMAS RAYMOND, Mown Meadows, Crook, Co. Durham. British. Student. B.Sc. (Dun.), Hons. Chemistry, Class III. (*Signed by*) W. N. Haworth, G. C. Leitch, W. M. Madgin, C. F. Allpress.

HOLLOWAY, JOSEPH, 39, Elmfield Road, Bromley, Kent. British. Chemistry Master in the Bromley County Secondary School for Boys, Bromley, Kent. B.Sc. London. 1st Class Honours in Chemistry. Teacher of Science for 17 years. Associate of Institute of Chemistry (A.I.C.). Research Student at Battersea Polytechnic, London. (*Signed by*) J. Kenyon, J. L. White, A. Houssa, Harold Hunter, Robert H. Pickard.

HOLNESS, HARRY, The Vineries, Ash, Canterbury. British. Honours Student in Chemistry (final year) at the University of Leeds. Have had some experience in research. (*Signed by*) C. K. Ingold, R. Whytlaw Gray, W. Lowson, C. H. Douglas Clark, H. M. Dawson.

HOPE, WILLIAM PLENDERLEITH LEWELLEN, 6, Cornwall Avenue, Finchley, N. 3. British. Analytical Chemist. B.Sc. (Edinburgh), A.I.C. 4 Years' experience of Food and General Analytical work as Assistant to Messrs. Hehner & Cox, 11, Billiter Square, E.C. 3. (*Signed by*) H. E. Cox, E. M. Voelcker, E. R. Bolton.

HUNT, GEORGE EDWARD DRAPER, Bank Cottage, Lower Bradley Street, Wotton-under-Edge, Glos. British. Science Master, Katharine Lady Berkeley's Grammar School, Wotton-under-Edge, Glos. B.Sc. Manchester University. Science Master at Wirksworth Grammar School and Katharine Lady Berkeley's Grammar School since demobilisation in 1920. (*Signed by*) Harold B. Dixon, Arthur Lapworth, Henry Stephen, Colin Campbell, F. P. Burt, J. E. Myers, John Harwood.

JOHN, MARGARET ELIZABETH, Sandy, Bedfordshire. British. Research Student. Teacher of Chemistry. (*Signed by*) J. F. Spencer, H. Crompton, J. Stewart.

JONES, THOMAS ALFRED, School House, East Hoathly, Sussex. British. Student. Having been a full-time student at University College, London, I graduated in Chemistry, taking B.Sc. (London) Honours Chemistry in 1923. (*Signed by*) J. N. Collie, F. G. Donnan, Allan E. Mitchell.

KEAR, IVOR EVANS, "Ingledene," Cinderford, Glos. British. Student.

Chemistry Master, Cinderford Sec. School, Glos., 1918–1920. Bachelor of Science (University of Liverpool) with First Class Honours in School of Chemistry, 1923. (*Signed by*) E. C. C. Baly, W. C. M. Lewis, I. M. Heilbron.

KELLY, CHARLES IGNATIUS, 2, Thomas St., Carnarvon, N. Wales. British. Analytical Chemist, Inspection Department, Anglo-American Oil Co., Ltd., Purfleet, Essex. Free Entrance Scholarship, Carnarvon County School, 1912–1920. Lord Kitchener National Memorial Scholar, 1920–24. B.Sc. Tech., Victoria University, Manchester, Second Division, 1923. M.Sc. Tech., 1924. Thesis on "Formation and Reduction of some Derivatives of *iso*-Quinoline." Laboratory Assistant, Propulsives Dept., H.M. Factory, Pembrey, Carmarthenshire, S. Wales, Aug. 1917 to Dec. 1918. Assistant Demonstrator in Organic and Inorganic Laboratories for Session 1923–24 of Part-time Evening Classes in Technology organised by Manchester Education Committee. (*Signed by*) Frank Lee Pyman, Ernest Vanstone, John K. Wood.

KILROY, MAUD WINIFRED, Brooklyn Hotel, Earl's Court Square. British. Chemical Research. B.Sc. London (Chemistry Hon.). (*Signed by*) G. A. R. Kon, M. A. Whiteley, Arnold Stevenson.

KREIS, ERIC SILVESTER, Toc H., Mark I, 23, Queen's Gate Gdns., S.W. 7. British. Research student at the Royal College of Science. I am an associate of the Royal College of Science and wish to become a fellow of the Society to keep in touch with recent research. (*Signed by*) H. B. Baker, H. F. Harwood, G. A. R. Kon.

KRISHNAMURTI, SUBRAMONIA, Trivandrum, South India (118, Belsize Road, London, N.W. 6). Indian. Research Student. Graduate of the University of Madras (S. India); Research Student in Physical Chemistry in the University College, London, from Dec. 1922. Qualifying for the degree of M.Sc. of the University of London. (*Signed by*) F. G. Donnan, W. E. Garner, Henry Terrey.

LADHAMS, DONALD ERNEST, Brook Villa, Shirley Warren, Southampton. English. Student of Chemistry. Student at the University College, Southampton, for London degree in Hons. Chemistry (Intermediate and Subsidiary subject Exams. passed). Registered Student of Institute of Chemistry. (*Signed by*) D. R. Boyd, G. S. W. Marlow, F. W. Goddard.

LAKEMAN, ENID, Bedford College, Regent's Park, London, N.W. 1. English. Student. Honours Chemistry Student. (*Signed by*) J. F. Spencer, H. Crompton, P. V. McKie, M. S. Crewdson.

LITHGOW, JAMES CRAIB, 23, Lauderdale Ave., Newlands, Glasgow. British. Analytical Chemist. Seven years experience of General Analytical Chemistry in the laboratories of Messrs. R. R. Tatlock & Thomson, City Analysts, Glasgow. Obtained First-class certificates at the Royal Technical College, Glasgow, in the following subjects: Inorganic, Organic, and Physical Chemistry, Fuels, Oils, Dyeing, Metallurgy, Metallography, Paints and Varnishes. (*Signed by*) R. T. Thomson, A. R. Campbell, Geo. Grant.

MAUNG MAUNG, 342, Lower Main Road, Moulmein, Burma. Burmese. Student. Associate of the Royal College of Science. (*Signed by*) Jocelyn Thorpe, M. A. Whiteley, James C. Philip.

MIHOLIĆ, STANKO STANKOV, 45, Jurjevska, Zagreb, Jugoslavia. Croatian Director of the Chemical Department of the State Institute of Epidemiology in Zagreb. Ph.D. (Zagreb) in 1918. 1919–1920 Teacher in the Commercial Academy in Zagreb, since 1920 the head of the Chemical Department of the State Institute of Epidemiology. Engaged in research work in Inorganic Chemistry and Geochemistry. Published several papers in *Rad. Acad.*

Sci. Zagreb. Abstractor for the Journal of the Chemical Society. (*Signed by*) James C. Philip, Henry Terrey, N. V. Sidgwick.

MOIR, GEORGE MORRISON, 184, Shetland St., Wakari, Dunedin, N.Z. Science Teacher, King Edward Technical College, Dunedin. B.Sc. (N.Z.) 1921. Senior Scholar in Chemistry, Univ. of N.Z. M.Sc. (N.Z.) 1922. 1st Class Honours in Chemistry. Part time demonstrator in Chemistry, Otago University, 1917 and 1920. Part time demonstrator in Physics, Otago University, 1921. Part time Assistant to Professor of Chemistry, Otago University, 1922 and 1923. Smeaton Research Scholar in Chemistry, Otago University, 1923. (*Signed by*) J. K. H. Inglis, C. L. Carter, F. H. McDowall, Roy Gardner.

MURRAY, HUMPHREY DESMOND, 26, Stonor Road, Kensington, W. 14. British. Assistant Lecturer and Demonstrator, Imperial College of Science, South Kensington. B.A. (Oxon). Publications in *Phil. Mag.* (*Signed by*) James C. Philip, H. B. Baker, M. A. Whiteley, H. F. Harwood, A. A. Eldridge.

NAKASATO, TATSUO, Pharmaceutical Institute of Tokyo Imperial University. Japanese. Appointed Assistant of the Pharmaceutical Institute of the Tokyo Imperial University. Appointed Assistant of Pharmaceutical Chemistry. (*Signed by*) Robert Robinson, Junzo Shinoda, Shigeru Komatsu.

NARAYANAN, BINDIGANAVALE TIRUMALACHAR, 28, Eardley Crescent, Earl's Court, London. Indian, British protected subject of the Mysore State. Research Student in Chemistry (Organic and interested in Biochemistry) at the Imperial College of Science, South Kensington, London. Bachelor of Arts in Chemistry of the Madras University, 1922. Student at the Indian Institute of Science for a Post-graduate Course, Nov. 1922 to July 1924. (*Signed by*) G. A. R. Kon, M. A. Whiteley, Arnold Stevenson, E. H. Farmer.

NICHOLLS, CLAUDE EDWARD COURTENAY, Yarmouth, Isle of Wight. British. Student. Student in Dept. of Chemistry, University College, Southampton. Student Member of Institute of Chemistry. Intermediate B.Sc. 1923. Subsidiary Geology to B.Sc. Honours in Chemistry, 1923. (*Signed by*) D. R. Boyd, G. S. W. Marlow, F. W. Goddard.

NOTTON, HAROLD EUGENE FREDERICK, University Chem. Laboratories, Cambridge. British. Demonstrator in Organic Chemistry in the University Chemical Laboratories. A.R.C.S., B.Sc. (1st Class Honours, London), 1923. Obtained present position in March, 1924. (*Signed by*) W. J. Pope, R. T. M. Haines, F. G. Mann, L. P. McHatton.

NUTLAND, JOHN HENRY, 68, Stonhouse St., Clapham, London, S.W. 4. British. Research Student at Imperial College; Royal College of Science; Organic Chemistry. A.R.C.S., 1st Class Chemistry, 1924. B.Sc., 2nd Class Hons. Chemistry, 1924. (*Signed by*) M. A. Whiteley, James C. Philip, Philip C. Bull.

PARROTT, GEORGE OSBORN, 67, Mortlake Rd., Kew Gardens, Surrey. British. Chemical Representative and Propagandist amongst the Medical Profession, also a Student worker in Manufacturing and Technical Chemistry. Am anxious to have opportunity to regularly study the J.C.S., and attend the various lectures at Burlington House. (*Signed by*) Archibald Macpherson, Francis W. Hodges, Frank A. Boys.

PEAT, STANLEY, East Hetton Colliery, Coxhoe, Durham. British. Research Student. B.Sc., 1st Class Honours in Chemistry, Armstrong College, University of Durham. (*Signed by*) W. N. Haworth, G. C. Leitch, C. F. Allpress, W. Maw.

PENN, SIDNEY GORDON, Carlos, St. Michael's Rd., Coventry. Consulting

Metallurgist and Technical Representative to an Engineering Firm. Served 5 years apprenticeship to Chemical, Physical, and Metallurgical Profession. Assisted in Researches on Metals. Attended classes in Metallurgy, Metallography, Chemistry, and Physics at Coventry and Birmingham Technical Institutes. Late Chief Assistant Chemist to a motor firm. (*Signed by*) M. A. Shenton, E. Holmes, Cedric A. Vincent Davies.

PERRY, HILDA MARY, Wolseley, Woodside Park, North Finchley, N. 12. British. Student. Hons. B.Sc. Lond. Engaged in Research—Organic Chemistry—with a view to M.Sc. (*Signed by*) O. L. Brady, J. N. Collie, J. N. E. Day.

PETERS, RUDOLPH ALBERT, Department of Biochemistry, Oxford. British. Whitley Professor of Biochemistry, Oxford. Late Dunn Lecturer and Senior Demonstrator in Biochemistry, Cambridge. "The Specific Oxygen Capacity of Hæmoglobin," *J. Physiol.*, 1912, **44**, and other papers relating to Biochemistry and Physiology. M.A., M.D. (Cantab.). (*Signed by*) W. H. Perkin, E. Hope, S. G. P. Plant.

PHILLIPS, HENRY, Ph.D. (Lond.), A.I.C., 80, Brook St., Kennington Rd., S.E. 11. British. Research Assistant to Dr. R. H. Pickard, F.R.S., Battersea Polytechnic, S.W. 11. The candidate is the author of: "Investigations on the Dependence of Rotatory Power on Chemical Constitution, Part XV. and Part XVII," *J.C.S.*, 1923, **123**, 22, 45. (*Signed by*) Robert H. Pickard, J. Kenyon, Harold Hunter.

PLOWMAN, EDWARD WILLIAM, 8, Halliford St., Canonbury, N. 1. British. Student of Chemistry at the Imperial College of Science and Technology (Royal College of Science). (*Signed by*) James C. Philip, H. B. Baker, M. A. Whiteley.

PURCELL, RONALD HERBERT, 25, Windmill St., Gravesend. English, Chemistry Student. 1st Class A.R.C.S. in Chemistry. 1st Class B.Sc. in Chemistry. (*Signed by*) H. B. Baker, James C. Philip, H. F. Harwood.

REES, HENRY GEORGE, 21, Park Road, Harlesden, N.W. 10. British. Student. 3rd Year Student in Chemistry at the Royal College of Science, S. Kensington. Internal Student of the University of London. (*Signed by*) M. A. Whiteley, H. B. Baker, James C. Philip.

RICHARDSON, HENRY LORIMER, c/o Imperial College of Science and Technology, London, S.W. 7. British. Research Student. 4½ Years Student at Victoria University College, N.Z.; 2 Years "Student Assistant"; 2 Years Research; Senior Scholar in Chem.; M.Sc. (N.Z.), 1st Class Honours; Jacob Joseph Scholar; Dominion Science Scholar. (*Signed by*) E. H. Farmer, M. A. Whiteley, G. A. R. Kon, Arnold Stevenson.

ROBERTS, LEN RILEY, National Oil Refineries Ltd., S. Wales. British. Manager's Assistant since 1923. Works Chemist with Blundell, Spence & Co. Ltd., on Colours, Oils, Varnishes, and Petroleum Refining, 4½ years. "Chemist-in-Charge" T.N.T. section H.M. Factory, Queensferry. Also carried out work on T.N.X. "Chemist-in-Charge" H.S. Gas Factory, H.M. Factory, Avonmouth, from initial stages to manufacture being a practical proposition (1916 to 1918). Received Order of British Empire. Chemist at Tampico Refinery, Eagle Oil Co., Mexico. Assistant Works Manager, Tuxpam Refinery, Eagle Oil Co., Mexico, 1918 to 1921. "Control Chemist" National Oil Refineries, S. Wales, 1921–1923. (*Signed by*) Arthur M. O'Brien, Andrew Campbell, R. G. Neilson.

ROBERTS, SYDNEY WILLIAM ELLIS, 4, Sellons Avenue, Harlesden, N.W. 10. British. Works Chemist with The Bristol Celanese Ltd., Willesden. Passed Wales Matric., and Inter B.Sc., standard for A.I.C. Reasons: To have

access to the Society's Library and be kept in touch with modern chemistry through the Journal of the Society. (*Signed by*) Roland J. May, David R. Davey, Percy B. Domone.

ROBINSON, PERCY HARRY, 38, Leyland Road, Lee, S.E. 12. Assistant Master (Secondary School). B.Sc. 1st Class Hons. Chemistry, 1923 (Battersea Poly.). B.Sc. Pass Degree, 1911 (Univ. Coll., London). Teachers' Diploma, 1912 (Lond.). Associate of Institute of Chemistry, 1919. (*Signed by*) J. Kenyon, Harold Hunter, S. Greenberg, F. C. Ray, J. L. White, A. Houssa, D. R. Snellgrove, Francis H. Banfield.

ROBINSON, WILLIAM, 18, Chapel Lane, Headingley, Leeds. English. Technological Chemist in Dyestuffs Industry. Member of the "Society of Dyers and Colourists." Following Matriculation at London, two years at London University, two years at Leeds University in Dye Chemistry. Three years in charge of plant for the large scale manufacture of synthetic "azo" dyestuffs. Some work on "Oleina" Oils and allied materials. (*Signed by*) Frank Radcliffe, Thos. R. Owles, S. Gray Fenton.

ROGER, ROBERT, 243, Strathmartine Rd., Dundee. British. Research Student. B.Sc., Ph.D. (St. Andrews), Carnegie Trust Research Scholar. Part author (with Professor A. McKenzie, F.R.S.) of a paper entitled "Migration of Groups in Derivatives of Benzoin and Desylamine" in the *Journal of the Chemical Society*, 1924, **125**. (*Signed by*) Alex. McKenzie, J. C. Irvine, O. Rhys Howell, David Stiven.

ROSE, THOMAS, 27, Morley Carr, Lowmoor, nr. Bradford. English. Analytical Chemist. Have held positions with two firms as Coke Oven Chemist. Extensive experience of general analysis, particularly organic, and chemical control of works processes, and have lectured publicly on technical subjects. (*Signed by*) H. Russell Pitt, Thomas E. Hull, A. B. Coles.

ROSS, JOHN, 29, Warriner Gardens, Battersea Park, S.W. 11. British. Research Student. B.Sc. (Hons. Chemistry, 1st Class). A.R.C.S. (Chemistry). (*Signed by*) James C. Philip, G. A. R. Kon, E. H. Farmer.

ROW, TANDALAM LAKSHMAN, Agricultural College, Lawley Road P.O., Coimbatore (S. India). Hindu. Assistant Govt. Agricultural Chemist. Student, Imperial College of Science and Technology, London. Assistant Agricultural Chemist, Coimbatore, Madras. (*Signed by*) Jocelyn Thorpe, M. A. Whiteley, James C. Philip.

RUFFMAN, DAVID ALEXANDER, F.R.G.S., 187, Cromwell Road, London, S.W. 5. Russian. Managing Director, Supex Limited. "Ergot: Its Production and Collection in Russia," *The Pharmaceutical Journal*, 29, II, 1908, p. 247, by D. A. Ruffman and Thomas Maben, F.C.S. "Titanotherapia," Journal in the Russian language edited by D. A. Ruffman in St. Petersburg from 1912 to 1914, dealing with the effects of calcium on, and its importance for the human body. Research work carried out by D. A. Ruffman in connection with new method of manufacturing chocolate and treatment of Cacao without alkali; this work and invention sold to British manufacturers, who are now producing Supex chocolate. "Across Siberia by Rail," written by D. A. Ruffman, dealing with questions pertaining to agriculture, gold mining, etc., in Siberia. (*Signed by*) E. Avery Roff, Thos. Tucker, Thomas Maben.

SAINI, MULK RAJ, Hall Bazar, Amritsar, Panjab, India. British subject, Aryan (Hindu). Industrial Surveyor and Additional Inspector of Factories, Department of Industries, Panjab. Passed Master of Science Examination of the Panjab University in Chemistry. Research work on Iodine Value and

Saponification Value of Vegetable Oils and Fats. (*Signed by*) N. A. Yajnik, V. S. Puri, Edwin Theodore Dean.

Scott, Samuel Lamplough, 37, Chatsworth Road, Bournemouth. British. Member of Pharmaceutical Society. Desires to receive the Society's publications and to have use of Library. (*Signed by*) Archibald Macpherson, Ernest Quant, David J. Williams.

Shill, Arthur Charles, 8, Judd Road, Tonbridge, Kent. British. Student. Chemistry Student. Imperial College (Royal Coll. of Science), South Kensington, S.W. 7. (*Signed by*) James C. Philip, H. B. Baker, M. A. Whiteley.

Sircar, Sarbbani Sahay Guha, 21, Cromwell Road, London, S.W. 7. British Indian. Student, candidate for the D.Sc. degree of the London University. Interested in Chemistry, being a candidate for the D.Sc. (London) degree in Chemistry. Submitted a paper "On the Condensation of Resorcinol and a few other Aromatic Hydroxy Compounds with some Acids, Esters, Lactones, and Lactams," to the Chemical Society for publication in the *J.C.S.* Publication held in abeyance in view of further work having been deemed necessary. (*Signed by*) G. A. R. Kon, E. H. Farmer, M. A. Whiteley.

Smith, Isobel Agnes, 2, Seafield Place, Broughty Ferry, Forfarshire. British. Science Student in training. M.A., B.Sc., Ph.D. Carnegie Fellow 1922–23, 1923–24. Joint author of following papers: "Catalytic Racemisation of Optically Active Acid Amides" (*T.*, 1922, **121**, 1348). "The Isomeric *l*-Menthyl Phenylchloroacetates" (*T.*, 1923, **123**, 1962). "Catalytic Racemisation of the Diastereoisomeric *l*-Menthyl Phenylbromoacetates" (*T.*, 1924, **125**, 1582). (*Signed by*) Alex. McKenzie, J. C. Irvine, H. J. Plenderleith, David Stiven, Valerie E. Swainson.

Smith, Philip Hugh Payne-, 22, Wallbutton Rd., Brockley, S.E. 4. British. Student (Research) at the Royal College of Science, and wish to keep in touch with up-to-date developments in Chemistry. (*Signed by*) M. A. Whiteley, G. A. R. Kon, James C. Philip.

Smith, Roland Wilfred John, London House, High St., Felixstowe, Suffolk. British. Research Student, East London College. B.Sc. London, Honours Chemistry. (*Signed by*) E. E. Turner, B. D. Shaw, A. T. Healey, J. R. Partington.

Steele, Ettie Stewart, University Hall, St. Andrews. British. Lecturer in Chemistry, The United College, University of St. Andrews. M.A., B.Sc., Ph.D. (St. Andrews). Author or Joint Author (with Principal Irvine) of original papers published in Transactions as under: (1) *T.*, 1915, **107**, 1221; (2) *ibid.*, p. 1230; (3) *T.*, 1918, **113**, 257; (4) *T.*, 1920, **117**, 1474; (5) 1922, **121**, 1060. (*Signed by*) J. C. Irvine, John Read, G. M'Owan.

Stephens, Oswald Counsell, Temuka, Timaru, New Zealand. Chemist. Master of Science, with First Class Honours in Chemistry. Demonstrator in Chemistry at Otago University in 1921 and 1922. In 1922 read a paper on "The Preparation of Cyanacetic Ester" before the Australasian Association for the Advancement of Science. (*Signed by*) J. K. H. Inglis, C. L. Carter, F. H. McDowall.

Stewart, Neil Bulloch, 49, Roslea Drive, Dennistoun, Glasgow. British. Works Chemist. 3 Years Analytical Chemistry covering many branches of the Chemical Industry, together with Analysis of Food and Drugs and particularly Mineralogical Analysis. All at the County Analysts (Wallace & Clark, Glasgow). 5½ Years in Analysis of Oils, Paints, and Varnishes and many products allied to the trade as well as manufacturing control (J. &

D. Hamilton, Glasgow). (*Signed by*) Douglas A. MacCallum, R. M. Caven, R. M. Clark.

STRATHDEE, ROY BROWN, c/o Farquharson, 17, Albyn Place, Aberdeen (after October) Emmanuel College, Cambridge. British. Research Student. M.A. (Abd.). B.Sc. (1st Hons. Chem.) (Abd.). At present engaged in Research work (Chem.) at Abd. Univ. (*Signed by*) Alex. Findlay, W. Thomas, T. Harold Reade.

SUTCLIFFE, CHARLES EDWARD, West House, Agbrigg, Wakefield. British. A principal in the firm of Edward Sutcliffe, Maltster, Mirfield. Passed London Matriculation (including Chemistry) 1909. Chairman of Yorkshire and North Eastern Section of the Institute of Brewing (2nd year), and a representative on the Research Committee of that Institute. (*Signed by*) O. C. J. G. L. Overbeck, H. Hobson, T. George Shacklady.

SYKES, FRANK, 11, Upper Price Street, York. British. Analytical Works Chemist. Formerly Assistant Chemist: No. F. la (Amatol) National Filling Factory (Munitions), Leeds. Ardol, Ltd., Selby. The Olympia Oil & Cake Company, Ltd., Selby. Now Chemist to H. Leetham & Sons, Ltd., York (and all associated companies) (Flour Millers and Grain Importers). (*Signed by*) James R. Park, George H. Croft, Harry B. Marston.

THIMANN, KENNETH VIVIAN, 28, Manor Drive, Wembley Park, Middlesex. British. Research Student in the Biochemical Dept., Imperial College of Science and Technology. B.Sc. (Hons.) of London University, and A.R.C.S. (*Signed by*) S. B. Schryver, James C. Philip, H. F. Harwood, Harold Mastin.

THOMAS, JOHN OWEN, Compton House, Ton Pentre, Rhondda, Glam. Welsh. Chemist and Druggist. Member of the Pharmaceutical Society of Gt. Britain. Six years study of Pharmaceutical Chemistry. Three years spent at various institutions acquiring the science of Analytical Chemistry. (*Signed by*) C. Morton, F. H. Lowe, J. C. Crocker.

THOMSON, CHARLES HENRY, 6, Lethington Avenue, Langside, Glasgow. British. Analytical and Manufacturing Chemist. 1913–15 Student with R. R. Tatlock & Thomson, Public Analysts, Glasgow. 1913–15 (evening) at Royal Technical College, Glasgow. 1915–18 On active service in France (Chemists' corps). 1918–21 Assistant with R. R. Tatlock & Thomson and student at Royal Technical College. 1921–24 Analytical and Manufacturing Chemist with J. & D. Hamilton, Oil and Paint Manufacturers, Glasgow. (*Signed by*) R. T. Thomson, A. R. Campbell, Geo. Grant.

THOMSON, MITCHELL GRAHAM, 63, Manor House Road, Jesmond, Newcastle-on-Tyne. British. Research Student. B.Sc., 1st Class Honours in Chemistry. (*Signed by*) W. N. Haworth, C. F. Allpress, G. C. Leitch, W. Maw.

TUCKER, PERCY ALEXANDER, "Braemore," Little Green Lanes, Erdington. British. Metallurgical Chemist. Two years on Staff of Metallurgical Dept. at National Physical Lab. Eight years on Chemical Staff of Consol. Gold Fields of S. Africa, Ltd. Eleven years Senior Assistant in charge of laboratory of late Mr. Alexander E. Tucker, who was for 30 years in practice as an Analytical and Consulting Chemist in Birmingham. (*Signed by*) F. W. Harbord, George Tate, Harry Silvester.

TURNER, JOHN PATER, South End Lodge, Newbury. British. Schoolmaster. M.A. (Cantab.), 3rd Class Honours, Natural Science Tripos (Chemistry, Zoology, Biology). Chemistry Master, Newbury Grammar School, 1921 to present time. Chemistry Master, Wolverley School, 1914–1919. (*Signed by*) L. A. Borradaile, C. T. Heycock, A. J. Berry.

VICKERS, ARTHUR ERIC JARVIS, 27, Lily Street, Wolstanton, Stoke-on-

Trent. Chemist (Research). Research Chemist on Refractory Materials under Britith Refractory Research Association. B.Sc. London. Six years industrial experience in Distillation of Coal and in allied industries. (*Signed by*) Leslie S. Theobald, Francis H. Clews, H. V. Thompson.

VIVIAN, CHARLES WILLIAM HENRY, 48, Clifford Rd., E. Finchley, N. 2. British. Senior Demonstrator (Chem. Dept., Northern Polytechnic Institute). B.Sc., A.I.C. Ex part-time Lecturer in Chemistry, Senior Demonstrator (N.P.I.). (*Signed by*) Raymond R. Butler, G. J. Avey, T. J. Drakeley.

VOELCKER, ERIC, 7, Durham Villas, Kensington, W. 8. British. Student of Chemistry at Royal College of Science, South Kensington. (*Signed by*) E. W. Voelcker, H. E. Cox, James C. Philip.

WALLACE, WILLIAM DAY, 25, Grafton Square, Clapham, S.W. British. Chemist. Minor Qualification, Pharmaceutical Society, 1920. Major Qualification, Pharmaceutical Society, 1922. Demonstrator, Heriot-Watt College, Edinburgh. Materia Medica, Pharmacy and Botany, 1922–23. (*Signed by*) Archibald Macpherson, John Macvie Hill, Percy Barrs, Alfred Thomas.

WATTS, GORDON EDWARD, "Belmont," Radcliffe Rd., Croydon. British. Research Student in Chemistry in the University of Cambridge. B.A. (Hons.) Cambridge. Part I, Natural Sciences Tripos, First Class. Part II, Natural Sciences Tripos, First Class. (*Signed by*) W. J. Pope, W. H. Mills, Eric K. Rideal.

WELSH, JAMES ROY GIBSON, Ashburne Lodge, 46, Minard Rd., Partickhill, Glasgow, W. 1. British. Analytical Chemist. I have been, for the past ten years, an analytical chemist in the employment of Messrs. R. R. Tatlock & Thompson, Analytical Chemists, Glasgow. During that period I have had a wide experience in the analysis of all kinds of materials. Educated in the Glasgow High School, and Glasgow Royal Technical College. (*Signed by*) R. T. Thomson, A. R. Campbell, Geo. Grant.

WIGNALL, ERNEST WILLIAM, 9, Tredegar Terrace, Bow, E. 3. British. Junior Hulme Scholar of Brasenose College, Oxford; now taking Part I, and about to engage upon research work for Part II, of the Final Honour School of Natural Science, Chemistry. (*Signed by*) E. Hope, T. W. J. Taylor, S. G. P. Plant, D. Ll. Hammick, G. H. J. Adlam.

WINTERBOTTOM, EDGAR, 247, Leeds Road, Nelson, Lancashire. British. Schoolmaster. Chemistry Master at Dunheved College, Launceston, Cornwall. B.Sc., Second Class Honours, Chemistry, of Manchester University, 1923. In charge of whole of Chemistry at Dunheved College, Launceston, and responsible for one senior student taking Final B.Sc. (London) in 1925; in full charge of chemical laboratory and engaged in private research work for M.Sc. (Manchester). (*Signed by*) Arthur Lapworth, J. E. Myers, Frederick Challenger, Henry Stephen.

The following Certificates have been authorised by the Council for presentation to ballot under Bye-Law I (2).

BEARDALL, HAROLD WILLIAM, P.O. Box 34, Newcastle, Natal, South Africa. British. Cereal Chemist. Diploma in Cereal Chemistry and Analysis awarded by the British School of Milling Chemistry, Grange-over-Sands. Inclusive of Bacteriology, Microscopy, Organic, and Inorganic Chemistry. Two years General Chemistry at the University of the Witwatersrand, Johannesburg. Matriculation (1919). (*Signed by*) Ernest A. W. Shaw, C. Smith.

GILL, WILLIAM GEORGE, Messrs. A. H. Wardle & Co., Ltd., Mombasa,

B.E.A. British. Chemist and Druggist (Pharmaceutical Society of Great Britain, London). To advance my knowledge of, and keep in touch with, Chemistry by means of the publications and, later, by attending lectures of the Chemical Society. (*Signed by*) G. T. R. Francis.

RAZZACK, SYED ABDUR, Hyderabad, Deccan (India). Mohammadan. Pharmaceutical Chemist. I am a prominent Chemist and Druggist of Hyderabad and Manufacturer of almost all the Pharmaceutical Preparations of the British Pharmacopea, and a supplier of medicines to H.E.H. The Nizam's Government, and have compiled a book in Urdu entitled a "Cyclopedia of New Remedies," containing 1400 pages, in which the therapeutic indications of all the latest remedies are given in detail. The Candidate has a keen interest in Chemistry. (*Signed by*) S. Mallannah.

TIN, MOUNG TUN, B.A., 3, Stewart Road, Rangoon, Burma. Burmese. Assistant to the Chemical Examiner to the Government of Burma. Graduate of the Calcutta University (1913–14). Winner of Chemistry Prize (Term 1913–14) in the then Government College, now the Rangoon University College. Sometime Assistant Demonstrator in the College Laboratory. Ten years' experience in the Chemical Examiner's Laboratory comprising examination of Mineral Oils, mixtures of Mineral and Vegetable Oils, also Toxicological and Medico-legal Analysis as well as examination of Tar, Asphalt, Pitch, and Bitumen. (*Signed by*) M. Thein Kin, William Dallas.

ADDITIONS TO THE LIBRARY.

I. *Donations.*

CURTIS, JOHN WILLIAM. Organisation of production. pp. 142. ill. 6*s*. net. (*Recd.* 6/11/24.)

From the Publishers: Messrs. Ernest Benn.

HALL, ARCHIBALD JOHN. Cotton cellulose: its chemistry and technology. London 1924. pp. 228. ill. 30*s*. net. (*Recd.* 6/11/24.) From the Publishers: Messrs. Ernest Benn.

HANDBUCH DER SALVARSANTHERAPIE. Mit Einschluss der experimentellen, biologischen und chemischen Grundlagen. Edited by W. KOLLE and K. ZIELER. Vol. I. Berlin 1924. pp. xiv + 750. ill. (*Recd.* 22/10/24.)

From the Publishers: Herren Urban & Schwarzenberg.

HENRY, THOMAS ANDERSON. The plant alkaloids. 2nd edition. London 1924. pp. viii + 456. ill. 28*s*. net. (*Recd.* 17/10/24.)

From the Publishers: Messrs. J. & A. Churchill.

INSTITUT DE MÉDICINE EXPÉRIMENTALE À PETROGRAD. Archives des Sciences Biologiques. Vol. XXI., etc. Petrograd 1918 + (*Reference.*) [In Russian, summaries in French.]

From the Biochemical Society.

INSTITUTION OF ENGINEERS, AUSTRALIA. The power resources of the Commonwealth of Australia and the Mandated Territory

of New Guinea. Report to the World Power Conference, London, 1924. Sydney 1924. pp. xii + 132. ill. (*Recd.* 22/10/24.)
From the Institution.

INSTITUTION OF PETROLEUM TECHNOLOGISTS. Standard methods of testing petroleum and its products. London 1924. pp. x + 102. ill. 6*s.* net. (*Recd.* 23/10/24.) From the Institution.

LISTER, JOHN EDWARD. The screening and grading of materials. London 1924. pp. 144. ill. 6*s.* net. (*Recd.* 6/11/24.)
From the Publishers: Messrs. Ernest Benn.

PARRISH, PERCY, and SNELLING, F. C. Sulphuric acid concentration. 2 vols. London 1924. pp. 142, 148. ill. 12*s.* net. (*Recd.* 18/11/24.) From the Publishers: Messrs. Ernest Benn.

PARTINGTON, JAMES RIDDICK. Chemical thermodynamics: an introduction to general thermodynamics and its applications to chemistry. London 1924. pp. viii + 276. ill. 10*s.* 6*d.* net. (*Recd.* 15/10/24.) From the Author.

POLLITT, ALAN A. The technology of water. London 1924. pp. 158. 6*s.* net. (*Recd.* 6/11/24.)
From the Publishers: Messrs. Ernest Benn.

READ, JOHN. A short course of practical organic chemistry: qualitative and preparative. St. Andrews [n.d.]. pp. 56. (*Recd.* 14/10/24.) From the Author.

SEYMOUR, HARTLAND. Crushing and grinding machinery. London 1924. pp. 144. ill. 6*s.* net. (*Recd.* 6/11/24.)
From the Publishers: Messrs. Ernest Benn.

SMITH, JOHN DAVID MAIN. Chemistry and atomic structure. London 1924. pp. 222. ill. 12*s.* 6*d.* net. (*Recd.* 1/11/24.)
From the Publishers: Messrs. Ernest Benn.

SPIELMANN, PERCY EDWIN. The constituents of coal tar. London 1924. pp. xii + 220. 12*s.* 6*d.* net. (*Recd.* 22/10/24.)
From the Publishers: Messrs. Longmans, Green & Co.

STEWART, ALAN WEST. A manual of practical chemistry for public health students. 2nd edition. London 1924. pp. xiv + 82. ill. (*Recd.* 14/10/24.) From the Author.

THOMS, HERMANN. [Editor.] Handbuch der praktischen und wissenschaftlichen Pharmazie. Vol. I. Part ii. Berlin 1924. pp. 321 to 700 + xii. ill. (*Recd.* 22/10/24.)
From the Publishers: Herren Urban & Schwarzenberg.

II. *By Purchase.*

ASTON, FRANCIS WILLIAM. Isotopes. 2nd edition. London 1924. pp. xii + 182. ill. 10*s.* 6*d.* net. (*Recd.* 18/11/24.)

BOGUE, ROBERT HERMAN. (Editor.) The theory and application of colloidal behaviour: contributed by the foremost authorities

in each division of the subject. 2 vols. New York 1924. pp. xii + 444 + xx, viii + 445 to 830 + xx. ill. 40*s*. net. (*Recd.* 27/10/24.)

CROWTHER, JAMES ARNOLD. Ions, electrons, and ionizing radiations. 4th edition. London 1924. pp. xii + 328. ill. 12*s*. 6*d*. net. (*Recd.* 18/11/24.)

FERMENTFORSCHUNG. Edited by EMIL ABDERHALDEN. Vol. VII, etc. Leipzig 1923–24 +. ill. (*Reference.*)

FISCHER, EMIL. Untersuchungen aus verschiedenen Gebieten. Vorträge und Abhandlungen allgemeinen Inhalts. Edited by MAX BERGMANN. Berlin 1924. pp. x + 914. *Gm.* 40.50. (*Recd.* 3/11/24.)

—— Untersuchungen über Triphenylmethanfarbstoffe, Hydrazine und Indole. Edited by MAX BERGMANN. Berlin 1924. pp. x + 880. *Gm.* 39. (*Recd.* 4/11/24.)

FISCHER, FRANZ. Chemie der Kohle. Vol. II. Die Umwandlung der Kohle in Öle. Berlin 1924. pp. viii + 368. ill. *Gm.* 11.70. (*Recd.* 29/10/24.)

HOPKINS, B. SMITH. Chemistry of the rarer elements. Boston 1923. pp. viii + 376. ill. 15*s*. net. (*Recd.* 16/10/24.)

JENNISON, FRANCIS HERBERT. The manufacture of lake pigments from artificial colours. 2nd edition. London 1920. pp. viii + 172. ill. 15*s*. net. (*Recd.* 18/11/24.)

LEWIS, WILLIAM CUDMORE MCCULLAGH. A system of physical chemistry. 3rd edition. Vol. III. Quantum theory. With certain appendices by JAMES RICE, A. M'KEOWN, and ROBERT OWEN GRIFFITH. London 1924. pp. x + 408. ill. 15*s*. net. (*Recd.* 18/11/24.)

LIESEGANG, RAPHAEL ED. Chemische Reaktionen in Gallerten. 2nd edition. Dresden 1924. pp. vi + 90. ill. *Gm.* 3.50. (*Recd.* 4/11/24.)

MEYERHOF, OTTO. Chemical dynamics of life phænomena. Philadelphia 1924. pp. 110. ill. 12*s*. 6*d*. net. (*Recd.* 16/10/24.)

MITCHELL, CHARLES AINSWORTH, and HEPWORTH, T. CRADOCK. Inks : their composition and manufacture. 3rd edition. London 1924. pp. xvi + 336. ill. 12*s*. 6*d*. net. (*Recd.* 16/10/24.)

OPPENHEIMER, CARL. Die Fermente und ihre Wirkungen : nebst einem Sonderkapitel " Physikalische Chemie und Kinetik " von RICHARD KUHN. 5th edition. Part I, etc. Leipzig 1924 +.

PANNELL, JOHN ROBERT. The measurement of fluid velocity and pressure. Edited by R. A. FRAZER. London 1924. pp. viii + 136. ill. 10*s*. 6*d*. net. (*Recd.* 18/11/24.)

RAYLEIGH, FOURTH BARON. ROBERT JOHN STRUTT. John William Strutt, third Baron Rayleigh. London 1924. pp. xii + 404. ill. 25*s*. net. (*Recd.* 18/11/24.)

ROBERTSON, THORBURN BRAILSFORD. Principles of biochemistry: for students of medicine, agriculture and related sciences. 2nd edition. London 1924. pp. xii + 17 to 796. ill. 35*s*. net. (*Recd.* 18/11/24.)

SEARLE, ALFRED BROADHEAD. Refractory materials: their manufacture and uses. 2nd edition. London 1924. pp. xvi + 730. ill. 42*s*. net. (*Recd.* 14/10/24.)

TAMMANN, GUSTAV. Lehrbuch der Metallographic: Chemie und Physik der Metalle und ihrer Legierungen. 3rd edition. Leipzig 1923. pp. xviii + 450. ill. *Gm.* 14.20. (*Recd.* 6/11/24.)

TEESDALE, CLYDE H. [and BEZEAU, C. MORTIMER]. Book I. Modern glues and glue testing. By C. H. TEESDALE. With an appendix: Methods of testing . . . in which is set forth the standards of the Bureau of Aircraft Production. Book II. Glue room equipment and the use of glue. By C. M. BEZEAU. Grand Rapids, Michigan [1922]. pp. 186. ill. 13*s*. 6*d*. net. (*Recd.* 12/11/24.)

UNDERHILL, FRANK PELL. Toxicology or the effects of poisons. Philadelphia 1924. pp. x + 292. 11*s*. 6*d*. net. (*Recd.* 16/10/24.)

WALDEN, PAUL. Optische Umkehrerscheinungen (Waldensche Umkehrung). Braunschweig 1919. pp. 214. (*Recd.* 14/11/24.)

WERNER, ALFRED. Beitrag zur Konstitution anorganischer Verbindungen. Edited by PAUL PFEIFFER. (Ostwald's *Klassiker*, No. 212.) Leipzig 1924. pp. 96. ill. *Gm.* 3.60. (*Recd.* 6/11/24.)

WESSELOW, OWEN LAMBERT VAUGHAN DE. The chemistry of the blood in clinical medicine. London 1924. pp. 256. 15*s*. net. (*Recd.* 18/11/24.)

WOKER, GERTRUD. Die Katalyse. II. Spezieller Teil. Abt. 2. Biologische Katalysatoren. 1. Hydrolysierende Fermente. (Die chemische Analyse. Vol. XXIII/XXIV.) Stuttgart 1924. pp. xvi + 584. (*Reference.*) *Gm.* 22.80.

WOODMAN, ALPHEUS GRANT. Food analysis: typical methods and the interpretation of results. 2nd edition. New York 1924. pp. x + 530. ill. 17*s*. 6*d*. net. (*Recd.* 18/11/24.)

III. *Pamphlets.*

AERONAUTICAL RESEARCH COMMITTEE. Reports and memoranda. No. 906. The measurement of viscosity by means of capillary tubes. By GUY BARR. London 1924. pp. 23. ill.

ARMSTRONG, HENRY EDWARD. James Dewar, 1842—1923: a Friday evening lecture to the Members of the Royal Institution, on January 18, 1924. London 1924. pp. 32. ill.

ASSOCIATION DES ELÈVES ET ANCIENS ELÈVES DE L'ECOLE DE CHIMIE. Inauguration du buste de Philippe-A. Guye. 13 Mars 1924. Genève 1924. pp. 39. ill.

BIRMINGHAM AND MIDLAND INSTITUTE SCIENTIFIC SOCIETY. Record 1872—1922 and Proceedings 1922—1923. Vol. I. [Birmingham 1924.] pp. 38. ill.

BLYTH, CHARLES E., MARTIN, GEOFFREY, and TONGUE, HAROLD. Researches on the theory of fine grinding. Part I. (*British Portland Cement Research Assoc.* Pamphlet No. 4.) London 1924. pp. 62. ill.

BOARD OF TRADE. Carbon monoxide in public gas supplies. Report on accidental deaths by poisoning from public gas supplies. By WILLIAM JOHN ATKINSON BUTTERFIELD. With correspondence arising thereon. London 1924. pp. 48.

FREETH, FRANCIS ARTHUR. Ternaire en quaternaire evenwichten in het stelsel: $NaClO_4$–$(NH_4)_2SO_4$–NH_4ClO_4–Na_2SO_4–H_2O bij 60° en 25° C. Leiden 1924. pp. xii + 53. ill. [In English.]

GOODENOUGH, G. A., and FELBECK, GEORGE T. An investigation of the maximum temperatures and pressures attainable in the combustion of gaseous and liquid fuels. (*Univ. Illinois Engineering Exper. Station*, Bulletin No. 139). Urbana 1924. pp. 160. ill.

HANCOCK, GEORGE CHARLES. Report on the composition of commoner British wines and cordials (alcoholic and non-alcoholic). Together with [a] report by the Government Chemist [Sir JAMES JOHNSTON DOBBIE] on the examination of samples. (*Ministry of Health Reports on Public Health and Medical Subjects*, No. 24.) London 1924. pp. iv + 58.

HENDRICK, JAMES. Drainage investigations at Aberdeen. (From the *Scottish J. Agric.*, 1924, **7**.)

INSTITUTE OF CHEMISTRY OF GREAT BRITAIN AND IRELAND. The progress of chemistry in public affairs. By JOHN THOMAS DUNN. London 1924. pp. 23.

JOINT COMMITTEE FOR THE STANDARDISATION OF SCIENTIFIC GLASSWARE. Report No. 1. Units of volume. pp. 6.

LEU, CHRISTIAN. La viscosité des huiles minérales: (loi des mélanges). (From the *Mon. Pétrole Roumain*, 1923.)

MACALISTER, D. A. Chemical reactions in bromoil. (From the *Q.J. Camera Club*, 1923, **1**.)

MILLER, LEWIS B. On the composition of the precipitate from partially alkalinized alum solutions. (From the *U.S. Public Health Reports*, 1923, **38**.) ill.

MITCHELL, C. W., and DAVENPORT, S. J. Hydrogen sulphide literature. (From the *U.S. Public Health Reports*, 1924, **39**.)

NATIONAL ASSOCIATION OF MASTER BAKERS, CONFECTIONERS & CATERERS. Reports on research at the National Bakery School, London, conducted by CHARLES DORÉE and JOHN KIRKLAND. (From the *Nat. Assoc. Review*, 1924.) ill.

PROCEEDINGS

OF THE

CHEMICAL SOCIETY.

Ordinary Scientific Meeting, Thursday, December 4th, 1924, at 8 p.m., Professor W. P. WYNNE, D.Sc., F.R.S., President, in the Chair.

The PRESIDENT announced:

1. That the following have been appointed to serve as British Representatives on the Editorial Board of the Journal of Physical Chemistry: Professors T. M. Lowry, J. W. McBain, and J. C. Philip by the Chemical Society, and Professor F. G. Donnan by the Faraday Society.

2. That Reprints of Abstracts for 1925, printed on one side of the paper only (the reverse side being gummed or ungummed as desired) suitable for card indexing purposes, can be obtained on application to the Assistant Secretary. The price of the Abstracts is £2 5*s*. 0*d*., and applications must be received on or before January 12th, 1925. Fellows should state when ordering whether they wish to receive the Abstracts gummed or ungummed.

3. That the following letter of congratulation from the Society will be presented by the President on the occasion of the Celebration of the Coming of Age of the University of Leeds and the Jubilee of its parent foundation, the Yorkshire College, to be held at Leeds from December 15th to 20th:

"To The Court, Council and Senate of the
University of Leeds.

"The President, Council and Fellows of the Chemical Society offer their most hearty congratulations on the occasion of the Celebration of the Coming of Age of the University of Leeds and the Jubilee of its parent foundation, the Yorkshire College.

"For fifty years the Chairs of Chemistry have been held by distinguished chemists, Fellows of our Society, who have created a school of chemistry of high reputation, the members of which have greatly extended our knowledge of chemistry by their original investigations.

"As a centre of learning, the University of Leeds occupies a conspicuous place in English education, and we desire to place on record our sincere wishes for its increasing prosperity.

"Signed on behalf of the Chemical Society,
W. P. WYNNE, *President.*
J. F. THORPE, *Treasurer.*
T. SLATER PRICE, } *Secretaries.*
C. S. GIBSON, }
ARTHUR W. CROSSLEY, *Foreign Secretary.*
"*November 20th*, 1924."

Certificates were read for the first time in favour of :

George Alfred Bartram, B.Sc., A.I.C., 19, Valley Road, Spital, Chesterfield.
George Harry Beeby, B.Sc., A.I.C., 92, Ashby Road, Loughborough.
Arthur Henry Burdick Bishop, Westminster Training College, 130, Horseferry Road, S.W. 1.
Walter Mark Duffin, B.Sc., A.R.C.S., 35, Binfield Road, S.W. 4.
Frederick John Eaton, Ph.D., B.Sc., A.I.C., Gas Light & Coke Co., Horseferry Road, S.W. 1.
Edward Hugh St. Clair Flack, M.Sc., 9, Bridge Street, Cambridge.
Desmond Geoghegan, 13, Port View, Heavitree, Exeter.
Reginald Oswald Gibson, B.Sc., A.I.C., 41, Peak Hill, Sydenham, S.E. 26.
Conrad Theodore Gimingham, F.I.C., Haddon House, Aarenbury Lane, Harpenden.
Jonathan Goodspeed, 36, Vicarage Lane, East Ham, E. 6.
Edward Stanley Hiscocks, B.Sc., 5, Rosehill, Swansea.
Arthur Frederick Hunt, B.Sc., 6, Seabrooke Cottages, Cranham.
Alan Richmond Kennedy, 88, Sellons Avenue, Harlesden, N.W. 10.
Frank Kenyon, A.I.C., Power Station, Greek Mouth, Barking.
Frederick Ernest King, 101, Cavendish Road, Highams Park.
Eric Knott, 21, West Richmond Street, Edinburgh.
Herbert Lambourne, M.A., M.Sc., F.I.C., 44, Brighton Road, S. Croydon.
Alfred Lucy, 16, Chesney Street, Battersea, S.W. 11.
Thomas Mann, Alexander Terrace, Bransty, Whitehaven.
Frederick William Offord, 66, Watford Road, E. 16.
Lionel Edward Outridge, B.Sc., Fernhurst, The Avenue, Chingford.
Stuart Russell Parsons, B.Sc., A.I.C., 65, Oakfield Road, Ilford.
Richard Edwin Pike, B.Sc., 6, Haymarket, S.W. 1.
John Frederick James Rule, B.Sc., 29, Alexandra Road, E. 6.
George Frederick Sheppard, 72, Mortlake Road, Kew Gardens.
Arthur Frederick Smethurst, Nippon, Cedar Road, Sutton.
Ethel Minnie Smewing, B.Sc., 42, Park Avenue South, N. 8.
Suzanne Mabel Lavinia Snelus, A.I.C., 67, Elgin Mansions, W. 9.
Charles James Still, M.Sc., Ph.D., 50, Queen's Parade, Bangor, Co. Down.
Mohammed Hassan Syed, B.Sc., Rupar, Amballa, India.
Eric Spencer Timms, B.Sc., 96, Grange Park Road, Thornton Heath.
Charles Cyril Norrey Vass, B.Sc., Holmleigh, Harboro' Road, Kingsthorpe.
Leslie Thomas Douglas Williams, A.R.C.S., 23, Queen's Gate Gardens, S.W. 7.
John Wilson, M.Sc., 115, Canterbury Road, N. Harrow.

Mr. W. B. Saville and Dr. E. E. Walker were elected Scrutators and a ballot for the election of Fellows was held. The following were subsequently declared elected as Fellows :

John Alfred Aeschlimann, B.A., M.Sc., A.I.C.
Reginald George Austin, A.I.C.
Mostafa Badia.
Isidore Elkanah Balaban.
Reginald Furlong Barnes, A.R.C.S.
Sydney Barratt, B.A.
John Barritt, B.Sc., A.R.C.S., A.I.C.
Thomas Charles Battersby.
Harold William Beardall.
Dorothy Marguerite Bennett, M.Sc.
Eric Albert Bevan, B.Sc.
Henry Booth, B.A.
Richard Parkinson Bothamley, B.Sc.
William Norman Bowran.
Alan Edwin Bradfield, B.Sc.
Alfred Brandt.
Frank Walter Britton.
Charles Edward Browne, B.Sc.
George Thomas Byrne, M.Sc., A.I.C.
Peter George Carter, B.Sc.
William Charlton, B.Sc.
Thomas Henry Clare.
Kenneth Ernest Cooper.
Francis Ernest Corringham.
Reginald Murdin Drake, B.Sc.
Colin Falconer Flint, B.Sc., A.R.C.S.
Ronald George Juta Fraser, B.Sc.
Robert Singleton Furness.
Richard Gane.
George Euan Gardam, B.Sc., A.R.C.S.
Walter Brendon Garner.
William George Gill.
Richard Frank Goldstein, B.Sc.
Herbert Greene, M.C., B.Sc., Ph.D.
Kenneth Massy Griffin, M.Sc.
Herbert Frank Halliwell.
Cyril Charles Harris, B.Sc., A.R.C.S.
Harold Ainsworth Harrison, M.Sc.
Philip William Benson Harrison, B.Sc.
John Harvey, B.Sc.
Frederick Hayter.
Ian Hepburn, B.A.
Thomas Raymond Hodgson, B.Sc.
Joseph Holloway, B.Sc., A.I.C.
Harry Holness.
William Plenderleith Lewellen Hope, B.Sc., A.I.C.
George Edward Draper Hunt, B.Sc.
Margaret Elizabeth John.
Thomas Alfred Jones, B.Sc.
Ivor Evans Kear, B.Sc.
Charles Ignatius Kelly, M.Sc.Tech.
Maud Winifred Kilroy, B.Sc.
Eric Silvester Kreis, A.R.C.S.
Subramonia Krishnamurti, B.A.
Donald Ernest Ladhams.
Enid Lakeman.
James Craib Lithgow.
Maung Maung, A.R.C.S.
Stanko Stankov Miholić, Ph.D.
George Morrison Moir, M.Sc.
Humphrey Desmond Murray, B.A.
Tatsuo Nakasato.
Bindiganavale Tirumalachar Narayanan, B.A.
Claude Edward Courtenay Nicholls.
Harold Eugene Frederick Notton, B.Sc., A.R.C.S.
John Henry Nutland, B.Sc., A.R.C.S.
George Osborn Parrott.
Stanley Peat, B.Sc.
Sidney Gordon Penn.
Hilda Mary Perry, B.Sc.
Rudolph Albert Peters, M.A., M.D.
Henry Phillips, Ph.D., A.I.C.
Edward William Plowman.
Ronald Herbert Purcell, B.Sc., A.R.C.S.
Syed Abdur Razzack.
Henry George Rees.
Henry Lorimer Richardson, M.Sc.
Len Riley Roberts, O.B.E.
Sydney William Ellis Roberts.
Percy Harry Robinson, M.C., B.Sc., A.I.C.
William Robinson.
Robert Roger, B.Sc., Ph.D.
Thomas Rose.
John Ross, B.Sc., A.R.C.S.
Tandalam Lakshman Row.
David Alexander Ruffman.
Mulk Raj Saini, M.Sc.
Samuel Lamplough Scott.
Arthur Charles Shill.
Sarbbani Sahay Guha Sircar.
Isobel Agnes Smith, M.A., B.Sc., Ph.D.

Philip Hugh Payne-Smith.
Roland Wilfred John Smith, B.Sc.
Ettie Stewart Steele, M.A., B.Sc., Ph.D.
Oswald Counsell Stephens, M.Sc.
Neil Bulloch Stewart.
Roy Brown Strathdee, M.A., B.Sc.
Charles Edward Sutcliffe.
Frank Sykes.
Kenneth Vivian Thimann, B.Sc., A.R.C.S.
John Owen Thomas.
Charles Henry Thomson.
Mitchell Graham Thomson, B.Sc.
Moung Tun Tin, B.A.
Percy Alexander Tucker.
John Pater Turner, M.A.
Arthur Eric Jarvis Vickers, B.Sc.
Charles William Henry Vivian, B.Sc., A.I.C.
Eric Voelcker.
William Day Wallace.
Gordon Edward Watts, B.A.
James Roy Gibson Welsh.
Ernest William Wignall.
Edgar Winterbottom, B.Sc.

The following papers were read :

"New halogen derivatives of camphor. Part VI. β-Bromocamphor-α-sulphonic acid." By H. Burgess and T. M. Lowry.

"New halogen derivatives of camphor. Part VII. The constitution of the Reychler series of camphorsulphonic acids. Experiments on chlorosulphoxides." By H. Burgess and T. M. Lowry.

"Some co-ordinated compounds of the alkali metals." By N. V. Sidgwick and S. G. P. Plant.

Ordinary Scientific Meeting, Thursday, December 18th, 1924, at 8 p.m., Professor W. P. Wynne, D.Sc., F.R.S., President, in the Chair.

The President referred to the loss sustained by the Society, through death, of the following Fellows :

	Elected.	Died.
John Marston Collett	June 16th, 1881.	Nov. 25th, 1924.
Thomas Kirkman Dealy	May 2nd, 1907.	Mar. 1st, 1924.

The President announced that

(1) The Harrison Memorial Prize Selection Committee, consisting of the Presidents of The Chemical Society, The Institute of Chemistry, The Society of Chemical Industry, and The Pharmaceutical Society, had unanimously resolved that no award of the Harrison Memorial Prize be made for 1924.

(2) The Council calls attention to the rule that smoking is not allowed on the Library floor.

The following were formally admitted Fellows of the Society :

F. H. McDowall, I. E. Balaban, E. W. Wignall, A. R. Cluer, R. G. Atkinson, H. O. Askew, H. L. Richardson, E. W. Plowman, T. A. Jones, A. C. Shill, R. S. Furness, E. A. Bevan, R. W. J. Smith, E. S. Kreis, P. H. P. Smith, H. G. Rees, J. G. Jackson, H. M. Perry.

Certificates were read for the first time in favour of :

Alexander Steven Corbet, Ph.D., B.Sc., A.I.C., Abbey Stone House, Sidmouth Street, Reading.
Alfred Davidson, B.Sc., 91, Hazelbottom Road, Cheetham, Manchester.
Arthur Hynard Durrant, 47, Cassiobury Road, E. 17.
George Alfred Edwards, B.A., B.Sc., 21, Crystal Palace Road, S.E. 22.
Ralph Margrave Esdaile, The Lytle Coal Co., Ltd., Minerville, Pa., U.S.A.
Clifton William Gibby, B.Sc., A.I.C., Clarendon Laboratory, Oxford.
Anthony James Hailwood, B.Sc., Hazel Bank, Hazel Road, Altrincham.
John Dobney Johnson, B.Sc., 6, Edward Street, Loughborough.
Cecil Brellisford Oakes Jones, Old Sewage Works, Whitley, Coventry.
Alfred James Andrew Lennane, M.R.C.S., L.R.C.P., 22, Ryder Street, St. James's, S.W. 1.
Edward Arthur Nightingale, 39, Pacific Road, Canning Town, E. 16.
John Massey Preston, B.Sc., A.I.C., The Dower House, Euxton, Chorley.
Richard Raper, B.A., 12, Mill Lane, Cambridge.
Leslie Vivian Donald Scorah, B.Sc., A.I.C., 139, Dodworth Road, Barnsley.
Joseph Thomas Shevlin, Corwen, Frederick Road, Wylde Green, Birmingham.
Alton Ewart Clarence Smith, Breydon, Oakmount Avenue, Southampton.
Claude Hyman Spiers, M.A., Ph.D., B.Sc., 34, Brondesbury Road, N.W. 6.
Harold Jacob Stern, Ph.D., B.Sc., 17, Croxteth Grove, Sefton Park, Liverpool.
Mary Beatrice Thomas, Girton College, Cambridge.
Eric Titterington, Abdine Palace, Cairo, Egypt.
Thomas Martin Aikten Tudhope, Ph.D., B.Sc., 8, Anson Road, Tufnell Park, N. 7.
John Henry Wylde, 203, Boleyn Road, Forest Gate, E. 7.

The following papers were read :

"The action of bromine on sodium and silver azides." By D. A. SPENCER.

"A method of determining the presence or absence of complex salts or ions in dilute aqueous solution." By W. H. PATTERSON and J. DUCKETT.

"The nature of the alternating effect in carbon chains. Part I. The directive influence of the nitroso-group in aromatic substitution." By C. K. INGOLD.

"The additive formation of four-membered rings. Part VI. The addition of azo-compounds to ethylenes and some transformations of the dimethylene-1 : 2-di-imine ring." By C. K. INGOLD and S. D. WEAVER.

"The chemistry of the glutaconic acids. Part XVII. Three-carbon tautomerism in the *cyclo*propane series. Part IV." By F. R. GOSS, C. K. INGOLD, and J. F. THORPE.

"The conditions underlying the formation of unsaturated and cyclic compounds from halogenated open-chain derivatives. Part VI. Products derived from halogenated α-methylglutaric acids." By C. K. INGOLD.

LECTURE.

Mr. W. B. HARDY, M.A., Sec.R.S., will deliver his Lecture on "Problems presented by Films on Solid Surfaces" on Thursday, February 26th, 1925, at 8 p.m., in the Lecture Hall of the Institution of Mechanical Engineers, Storey's Gate, Westminster, S.W. 1.

List of Papers, or Abstracts thereof, received between November 21st and December 18th, 1924. (This list does not include the titles of papers which have been read at a Scientific Meeting, or which have appeared in the Journal.)

"Side-chain formation in cyclo-paraffins. Part I." By W. A. WIGHTMAN.

"The reduction of the carbocyanines." By F. M. HAMER.

"Hydrolysis of the *d*-glucosides of *d*- and *l*-borneol with emulsin." By S. MITCHELL.

"The electrical explosion of tungsten wires." By H. V. A. BRISCOE, P. L. ROBINSON, and G. E. STEPHENSON.

"The reactivity of antimony haloids with certain aromatic compounds. Part II." By E. VANSTONE.

"The diffusion-potential and transport number of hydrochloric acid in concentrated solution." By S. R. CARTER and F. M. LEA.

"The influence of acid concentration on the oxidation-reduction potential of cuprous and cupric chloride." By S. R. CARTER and F. M. LEA.

"Elemi. The oleo-resin of *Canarium Muelleri*." By T. G. H. JONES and F. B. SMITH.

"Constitutional studies in the monocarboxylic acids derived from sugars. Part III. The isomeric tetramethyl galactonolactones and trimethyl arabonolactones." By J. PRYDE, E. L. HIRST, and R. W. HUMPHREYS.

"Determination of dissolved oxygen." By J. A. N. FRIEND.

"Di-salicylato-borates." By C. R. BURY and W. E. HAMER.

"Conversion of amino-acids into tertiary amino-alcohols." By A. MCKENZIE and G. O. WILLS.

"The synthesis of glycols from atrolactinic acid." By R. ROGER.

"Limits for the propagation of flame in inflammable gas–air mixtures. Part III. The effect of temperature on the limits." By A. G. WHITE.

"The mechanism of Kolbe's electrosynthesis." By R. E. GIBSON.

"The potassium chlororutheniates and the co-ordination number of ruthenium." By S. H. C. BRIGGS.

"The heat of solution and of decomposition of chlorine dioxide." By H. Booth and E. J. Bowen.

"Syntheses of substituted succinic acids containing aromatic residues." By W. Baker and A. Lapworth.

"6-Chlorophenoxarsine." By E. E. Turner and A. B. Sheppard.

"Further experiments on the periodic dissolution of metals." By E. S. Hedges and J. E. Myers.

"The reaction between silver and dilute sulphuric acid. The cohesion of the silver powder." By W. Hughes.

"The adsorption of aqueous sodium hydroxide and of aqueous sulphuric acid by finely-divided silver. The constitution of the adsorbed films and its bearing on the electrode potential." By W. Hughes.

"The action of light on chlorine dioxide." By H. Booth and E. J. Bowen.

"Synthesis of derivatives of γ-arabinose." By S. Baker and W. N. Haworth.

"The constitution of the normal monosaccharides. Part II. Arabinose." By E. L. Hirst and G. J. Robertson.

"Cryoscopic measurements with nitrobenzene. Part III. Equilibrium in nitrobenzene solution." By F. S. Brown.

"Studies in electroendosmosis. Part III." By F. Fairbrother and H. Mastin.

"Asymmetric compounds of pentavalent arsenic." By J. A. Aeschlimann.

"Some bromo-derivatives of *m*-hydroxybenzaldehyde." By H. H. Hodgson and H. G. Beard.

"2-Nitro-*m*-cresol and 2-amino-*m*-cresol." By H. H. Hodgson and H. G. Beard.

"The nitration of *m*-chlorophenol." By H. H. Hodgson and F. H. Moore.

"The surface tensions of aqueous phenol solutions. Part I. Saturated solutions." By A. K. Goard and E. K. Rideal.

"The thermal decomposition of nitrogen pentoxide." By H. S. Hirst.

ADDITIONS TO THE LIBRARY.

Pamphlets.

Parker, Richard Neville, Rau, Madyar Gopal, Robertson, Wheatley Alex., and Simonsen, John Lionel. Oils and fats from the seeds of Indian forest plants. Parts VI and VII. (From the *Indian Forest Records*, 1924, **10**.)

Parsons, Allan Chilcott. Fur dermatitis : report of an inquiry into the occurrence of dermatitis attributed to the wearing of fur

collars; 1922—1923. (*Ministry of Health Reports on Public Health and Medical Subjects*, No. 27.) London 1924. pp. iv + 31.

RASK, O. S., and ALSBERG, CARL LUCAS. A viscosimetric study of wheat starches. (From *Cereal Chemistry*, 1924, **1**.)

ROSENHAIN, WALTER. Present and future problems of metallurgy: being the third Sorby Lecture delivered on November 9th, 1923. [n.d.] pp. 32.

ROUGHLEY, T. C., and WELCH, MARCUS BALDWIN. Wood borers damaging timber in Australia. (*Sydney Technological Museum Bulletin*, No. 8.) Sydney 1923. pp. 27. ill.

SAYERS, R. R., and YANT, W. P. The elimination of carbon monoxide from blood, by treatment with air, with oxygen, and with a mixture of carbon dioxide and oxygen. (From the *U.S. Public Health Reports*, 1923, **38**.) ill.

SAYERS, R. R., YANT, W. P., and JONES, G. W. The pyro-tannic acid method for the quantitative determination of carbon monoxide in blood and air. (From the *U.S. Public Health Reports*, 1923, **38**.) ill.

SAYERS, R. R., [and others]. Collection and preservation of blood samples for determination of carbon monoxide. (From the *U.S. Public Health Reports*, 1923, **38**.) ill.

SCHMIDT-NIELSEN, S., and OWE, AAGE W. Die Bestimmung der Jodzahl. I. Vergleichende Untersuchungen über die Jodzahl der Fette. (From the *Videnskap. Skrifter*, 1923, No. **15**.) ill.

SCIENTIFIC AND INDUSTRIAL RESEARCH. Department of Deterioration of structures of timber, metal, and concrete exposed to the action of sea-water. Fourth (interim) report of the Committee of the Institution of Civil Engineers. Edited by P. M. CROSTHWAITE and GILBERT R. REDGRAVE. London 1924. pp. viii + 74. ill.

—— —— *Food Investigation Board.* Special Report No. 19, by the Engineering Committee. The thermal properties of methyl chloride. By D. N. SHORTHOSE. London 1924. pp. iv + 16. ill.

—— *Fuel Research Board.* Physical and chemical survey of the national coal resources, No. 3. The Lancashire coalfield: the Arley seam. London 1924. pp. vi + 37. ill.

—— —— Technical Paper No. 9. Carbonisation of seaweed as a preliminary to the extraction of iodine and potassium salts. By JAMES GRIEVE KING. London 1924. pp. ii + 16. ill.

SEIDELL, ATHERTON. The preparation of a crystalline picrate having the antineuritic properties of vitamine B. (From the *U.S. Public Health Reports*, 1924, **39**.)

SHANNON, EARL V. Benjaminite, a new sulphosalt mineral of the klaprotholite group. (From the *Proc. U.S. Nat. Museum*, 1924, **65**.)

PROCEEDINGS

OF THE

CHEMICAL SOCIETY.

Ordinary Scientific Meeting, Thursday, January 15th, 1925, at 8 p.m., Professor W. P. WYNNE, D.Sc., F.R.S., President, in the Chair.

The PRESIDENT referred to the loss sustained by the Society, through death, of the following Fellows :

	Elected.	Died.
Robert P. Douglas	May 2nd, 1912.	Nov. 24th, 1924.
Khasberao B. Jadhava	June 16th, 1887.	Oct. 6th, 1924.
Edmund G. Lamb	May 4th, 1893.	Jan. 3rd, 1925.
George Downing Liveing	Nov. 21st, 1853.	Dec. 26th, 1924.
James McAlley	June 15th, 1899.	Feb. 1924.
William Sharman	June 4th, 1874.	Dec. 21st, 1924.

The PRESIDENT announced :

(1) That the names of the Members of Council who retire at the Annual General Meeting on the 26th March, 1925, and who are ineligible for re-election to the same office until the lapse of one year, are as follows :

President :
Prof. W. P. Wynne.

Foreign Secretary :
Dr. A. W. Crossley.

Vice-Presidents who have filled the office of President :
Prof. H. B. Dixon, Prof. P. F. Frankland.

Vice-Presidents who have not filled the office of President :
Prof. E. C. C. Baly, Dr. J. T. Hewitt.

Ordinary Members of Council :

(*a*) Town Members :
Dr. C. Dorée, Dr. J. J. Fox, Prof. J. R. Partington.

(*b*) Country Members :
Prof. I. M. Heilbron, Prof. J. W. McBain, Dr. W. H. Mills.

The following vacant places fall due to be filled at the Annual General Meeting on March 26th, 1925, in accordance with the Bye-Laws :

President	One vacancy.
Secretaries	One vacancy.
Foreign Secretary	One vacancy.
Vice-Presidents who have filled the office of President	Three vacancies.

(Note : the vacancy additional to the two prescribed by the Bye-Laws is caused by the death of Sir James Dobbie.)

Vice-Presidents who have not filled the office of President	Two vacancies.

Ordinary Members of Council :

(*a*) Town Members (*i.e.*, those living within a radius of 50 miles from Charing Cross)	Five vacancies.
(*b*) Country Members (*i.e.*, those living beyond a radius of 50 miles from Charing Cross)	Two vacancies.

(Note : In accordance with the Bye-Laws, the number of vacancies in each of the categories (*a*) and (*b*) is three. But this year the vacancies among Town Members are increased by two and among Country Members reduced by two, owing to Prof. C. K. Ingold and Prof. J. Reilly, who are no longer resident in the London area, being transferred from Town to Country Members; while the resignation of a Country Member increases the number of vacancies among Country Members from one to two.

The Council has nominated :

Dr. A. W. Crossley to the office of President.
Dr. T. Slater Price to the office of Secretary.
Prof. F. G. Donnan to the office of Foreign Secretary.

(2) That the following address of congratulation was presented by Sir William Pope, F.R.S., to the Société Chimique de France on December 22nd, 1924, on the occasion of the celebrations of the 50th Anniversary of the foundation of Stereochemistry by van't Hoff and Le Bel in 1874 :

" To the Société Chimique de France.

" The President, Council and Fellows of the Chemical Society rejoice to learn that the Société Chimique de France is meeting on December 22nd on the occasion of the 50th anniversary of the foundation of Stereochemistry by Joseph Achille Le Bel and Jacobus Henricus van't Hoff.

"These two savants will ever be remembered for one of the most important advances in modern chemical thought and practice. The masterly conception which they gave to the chemical world has proved a fruitful incentive to brilliant researches, which have not only confirmed their theoretical reasoning, but have also immeasurably widened our knowledge of chemical structure.

"The Chemical Society, which is proud to have the name of Joseph Achille Le Bel on its list of Foreign Fellows, welcomes the opportunity of joining with its sister Society in doing honour to Le Bel and van't Hoff and in paying homage to their genius.

"Signed on behalf of the Chemical Society,

W. P. WYNNE, *President.*

(L.S.) JOCELYN THORPE, *Treasurer.*

T. SLATER PRICE, } *Secretaries.*
C. S. GIBSON, }

ARTHUR W. CROSSLEY, *Foreign Secretary.*

"Sealed in Council this Eighteenth day of December, One Thousand Nine Hundred and Twenty-four."

The following were formally admitted Fellows of the Chemical Society: H. J. George, E. Rothstein, R. F. Goldstein, S. Barratt, E. Roberts, J. A. Aeschlimann, J. Ross, and C. I. Kelly.

Certificates were read for the first time in favour of:

Claud McClellan Bottomley, B.Sc., 43, Manor Road, Blackburn.
Frederick Stanley Brown, B.Sc., A.I.C., Rosebank, Tile Hill Lane, Coventry.
Herbert Isaac Coombs, B.Sc., B.A., Trinity College, Cambridge.
Ernest James Davis, 45, McClure Street, Ormeon Road, Belfast.
Henry Bell Footner, B.Sc., Great Dean, nr. Christchurch, Hants.
Robert Owen Griffith, M.Sc., A.I.C., Muspratt Laboratory of Physical Chemistry, The University, Liverpool.
Herbert Henry Hodgson, M.A., Ph.D., B.Sc., F.I.C., 136, Paley Road, Bradford.
Wilford Jordayne Johnson, Devanha, South Road, Brighton Beach, Victoria, Australia.
William Wenallt Jones, M.Sc., 19, White Hart Lane, Wood Green, N. 22.
Jacob Kracovski, B.Sc., 11, Ernest Street, E. 1.
John Joseph Laws, 45, Fulham Road, South Kensington, S.W. 7.
Alexander John Simpson Leiper, 74, Whitworth Road, South Norwood, S.E. 25.
William Hamilton McVicker, M.Sc., 45, Wellington Park, Belfast.
Frank Douglas Miles, Caldwell Road, West Kilbride, Ayrshire.
William Bayley Parker, F.I.C., 3, Murray Road, Rugby.
Isaac Vogel, B.Sc., 16, Wellclose Square, E. 1.
Nellie Walker, M.A., Ph.D., B.Sc., 15, Fintry Place, Broughty Ferry.
James Ewart Whipp, 15, St. John's Street, Longsight, Manchester.

The following papers were read:

"6-Chlorophenoxarsine." By E. E. TURNER and A. B. SHEPPARD.

"The chemistry of the three-carbon system. Part III. αβ-βγ-Change in unsaturated acids." By G. A. R. KON and R. P. LINSTEAD.

"The influence of valency direction on the dissociation constants of dibasic acids." By C. H. SPIERS and J. F. THORPE.

"The relation of pilocarpidine to pilocarpine. Synthesis of 1 : 4- and 1 : 5-dimethylglyoxalines." By R. BURTLES, F. L. PYMAN, and J. ROYLANCE.

LECTURE.

Sir William Hardy, Sec.R.S., will deliver his Lecture entitled "Problems presented by Films on Solid Surfaces," on Thursday, February 26th, 1925, at 8 p.m., in the Lecture Hall of the Institution of Mechanical Engineers, Storey's Gate, Westminster, S.W. 1.

ANNIVERSARY DINNER.

The Anniversary Dinner will be held in the Grand Hall of the Hotel Victoria, Northumberland Avenue, W.C. 2, on Thursday, March 26th, 1925, the day of the Annual General Meeting. Further particulars will be issued shortly.

ORDINARY SCIENTIFIC MEETINGS IN FEBRUARY.

February 5th, at 8 p.m.

February 19th, at 8 p.m., when a ballot for the election of Fellows will be held.

List of Papers received between December 19th, 1924, and January 15th, 1925. (This List does not include the titles of papers, or abstracts thereof, which have been read at a Scientific Meeting, or which have appeared in the Journal.)

"Note on a simple constant-level apparatus for thermostats and water-baths." By J. M. SMITH.

"Studies of equilibrium in systems of the type $Al_2(SO_4)_3$–M″SO_4–H_2O. Part I. $Al_2(SO_4)_3$–$CuSO_4$–H_2O. $Al_2(SO_4)_3$–$MnSO_4$–H_2O at 30°." By R. M. CAVEN and T. C. MITCHELL.

"The mercuration of aromatic substances. Part I. Toluene." By S. COFFEY.

"The chemistry of the three-carbon system. Part IV. A case of retarded mobility." By G. A. R. KON and R. P. LINSTEAD.

"The velocity of reaction in mixed solvents. Part VIII. The velocity of formation of certain quaternary ammonium salts." By H. McCombie, H. M. Roberts, and H. A. Scarborough.

"Crystalline cuprous bromide." By D. B. Briggs.

"Phenyl benzyl diketone and some derivatives." By T. Malkin and R. Robinson.

"Tautomerism of amidines. Part V. Methylation of glyoxalines by diazomethane. Bromination of 4(or 5)-phenylglyoxaline." By W. G. Forsyth and F. L. Pyman.

"The mass of the hydrogen atom computed." By E. F. Morris.

"The reduction of aromatic nitro-compounds." By R. W. West.

"A redetermination of the atomic weight of boron." By H. V. A. Briscoe and P. L. Robinson.

"The interaction of nitrogen sulphide and sulphur. Nitrogen persulphide." By F. L. Usher.

"The composition of the liquid and vapour phases in mixtures of glycerol and water." By M. P. I. V. Iyer and F. L. Usher.

"Note on some metallic couples decomposing water at the ordinary temperature." By E. S. Hedges and J. E. Myers.

"Styrylbenzopyrylium salts. Part IV. γ-Styryl derivatives of 5 : 7-dihydroxy- and 5 : 7-dimethoxy-2-phenyl-4-methylbenzopyrylium chloride." By G. H. Walker and I. M. Heilbron.

"Styrylbenzopyrylium salts. Part V. Distyryl derivatives of 7-hydroxy-2 : 4-dimethylbenzopyrylium chloride." By I. M. Heilbron, G. H. Walker, and J. S. Buck.

"Interactions of tellurium tetrachloride and acetic anhydride." By G. T. Morgan and H. D. K. Drew.

"Quantitative reduction by hydriodic acid of halogenated malonyl derivatives. Part IV. The influence of substitution in the amide group on the reactivity of the halogen atom in bromomalonamide." By R. W. West.

CERTIFICATES OF CANDIDATES FOR ELECTION AT THE BALLOT TO BE HELD AT THE ORDINARY SCIENTIFIC MEETING ON THURSDAY, FEBRUARY 19th, 1925.

N.B.—The names of those who sign from "General Knowledge" are printed in *italics*.

Ashley, Julius Nicholson, 37, Scarsdale Road, Victoria Park, Manchester. British. Chemical Research student at the Victoria University of Manchester. B.Sc. Hons. (Birm.) 1923. A.I.C. 1923. (*Signed by*) Arthur Lapworth, R. Robinson, Frederick Challenger.

BARTRAM, GEORGE ALFRED, 19, Valley Rd., Spital, Chesterfield. British. Teacher of Chemistry. Student at University College, Nottingham, 1914–15, 1919 and 1920. B.Sc. (London Pass), 1920; B.Sc. (Lond., 2nd Class Hons. Chem.), 1922. Elected A.I.C. 1923. Teacher of Chemistry 1920 to present time. In charge of Chem. Advanced Course recognised by Board of Education 1922 to present time. (*Signed by*) F. Stanley Kipping, E. B. R. Prideaux, J. B. Firth, A. R. Blackburn.

BEEBY, GEORGE HARRY, 92, Ashby Rd., Loughborough. English. Chemistry Research Student. Training received at Loughborough College, under A. Bramley, Esq., D.Sc., F.I.C., etc. Hold degree of B.Sc. London. 2nd Hons. Chemistry. A.I.C. Diploma of Loughborough College (Hons.). Engaged on Metallurgical Research. (*Signed by*) Arthur Bramley, George Lawton, T. L. Garner, A. T. Eggington.

BISHOP, ARTHUR HENRY BURDICK, Westminster Training College, 130, Horseferry Rd., Westminster, S.W. 1. British. Assistant Lecturer in Chemistry. Research for one year at Jesus College, Oxford, on "Adsorption of Gases by Glass Wool." At present engaged in research on "Optical Rotatory Dispersion." (*Signed by*) P. C. Austin, E. E. Walker, Gerald Druce.

BLOOMER, VINCENT, B.Sc., 33, Balfour St., Oldham. British. Student. Have completed 3 years' Honours Chemistry Course at Victoria University, Manchester; am now doing one year's research course for the degree of M.Sc. (*Signed by*) Henry Stephen, F. P. Burt, D. H. Bangham.

BOTTOMLEY, CLAUD MCCLELLAN, 43, Manor Road, Blackburn. British. Brewer. B.Sc. (Lond.) [Chemistry taken at Final Exam.]. (*Signed by*) W. J. Stansfield, A. Bramley, G. W. F. Holroyd.

BROWN, FREDERICK STANLEY, "Rosebank," Tile Hill Lane, Coventry. British. Research Student (in receipt of a Scientific and Industrial Research Grant). Two years' works experience. Academic training at University College of Wales, Aberystwyth, from 1919 up to present time. 1st Hons. B.Sc. (Wales). A.I.C. Over two years' research experience. *J.C.S.* 1923, Vol. **123**, 2430. *J.C.S.* 1924, Vol. **125**, 2219. (*Signed by*) T. Campbell James, C. R. Bury, Albert Green.

CHORLEY, PERCY, 87, Hazelbottom Rd., Crumpsall, Manchester. British. Chemist. M.Sc. (Vict.). Beyer Fellow, Victoria University, Manchester, 1914. Published, with Professor A. Lapworth, a paper on "A new series of nitrogenous compounds derived from camphoroxalic acid" (*Trans.*, 1920, 728). Chemist, on the staff of British Dyestuffs Corporation, Ltd. (*Signed by*) E. H. Rodd, R. Brightman, H. Swann, Carlton Butler, Morvan Lapworth.

COOMBS, HERBERT ISAAC, Trinity College, Cambridge. British. Student. Bachelor of Science, First-class Bachelor of Arts of Oxford; Research work under Professor Perkin, F.R.S., and Professor Hopkins, F.R.S. (*Signed by*) W. H. Perkin, H. Raymond Ing, R. H. Griffith, N. V. Sidgwick.

CORBET, ALEXANDER STEVEN, "Abbey Stone House," Sidmouth St., Reading. British. Chemist. B.Sc., Ph.D. (London University). A.I.C. Papers published with Professor H. Bassett: "The Hydrolysis of Potassium Ferricyanide and Potassium Cobalticyanide by Sulphuric Acid," *J.C.S.*, June 1924. "A Phase-rule Study of the Cupro-, Argento-, Auro-, and Thallo-cyanides of Potassium," August, 1924. (*Signed by*) H. Bassett, J. W. Dodgson, D. Roy Maxted.

CROWE, WILLIAM HAUGHTON, "Bettwsville," Cherry Valley Park, Belfast (N. Ireland). British. Assistant in Chemistry (Q.U.B.). Research in Chemistry, Queen's University, Belfast. 1922–23, subject, "Effect of Light

on Brominations." 1923–24, University College, London, "Pyridones." (*Signed by*) A. W. Stewart, J. K. Marsh, H. Graham.

DAVIDSON, ALFRED, 91, Hazelbottom Rd., Cheetham, Manchester. British. Research Chemist, British Dyestuffs Corporation. B.Sc. (Glasgow) with distinction in Chemistry. T. S. Patterson and A. Davidson, *J.C.S.* (1912), **101**, 374. (*Signed by*) E. J. Amies, C. Hollins, S. C. Bate.

DAVIS, ERNEST JAMES, 45, McClure Street, Ormeau Road, Belfast. British. Chief Assistant Chemist, Messrs. Harland and Wolff, Belfast. Ten years Industrial Chemist with Messrs. J. Stone & Co., Deptford; Martin's Heat Treating and Testing Works, Coventry; Harland and Wolff, Ltd., Belfast. (*Signed by*) Henry Wren, Theophilus Harper, James W. Porter.

DUFFIN, WALTER MARK, 35, Binfield Road, S.W. 4. English. Research Student. A.R.C.S. B.Sc., London. Engaged in Research. (*Signed by*) H. B. Baker, G. A. R. Kon, Arnold Stevenson, M. A. Whiteley.

DURRANT, ARTHUR HYNARD, 47, Cassiobury Rd., London, E. 17. British. Bacteriologist and Demonstrator in Chemistry, Guy's Hospital and The Technical Institute, E. 17. Inventor of a Constant Cell, see *Junior Mechanic*, May, 1921. (*Signed by*) W. H. Collier, H. L. Long, E. C. Edgar.

EATON, FREDERICK JOHN, Ph.D. (Edin.), B.Sc. (Edin.), A.I.C., Chemical Laboratory, Gas Light and Coke Coy., Horseferry Rd., Westminster. British. Research Chemist, Gas Light and Coke Coy. Formerly part time Assistant Dept. of Medical Chemistry, Univ. of Edinburgh, and Research Student under Prof. Barger, F.R.S., Univ. of Edinburgh. Paper on "Blue Adsorption Compounds of Iodine," accepted 9th Sept., 1924. (*Signed by*) George Barger, Ellen Field, John E. Mackenzie.

EDWARDS, GEORGE ALFRED, 21, Crystal Palace Rd., London, S.E. 22. British. Demonstrator in Chemistry, King's College, London University. B.A. Oxon., First Class Honours in Chemistry. B.Sc. Oxon. Demonstrator in Chemistry at King's College, London University. Joint author of "Amino-derivatives of Tetrahydrocarbazole." (*Signed by*) Samuel Smiles, A. J. Allmand, E. W. McClelland, Frank W. Stoyle.

EMELÉUS, HARRY JULIUS, Battle, Sussex. British. Student. Research Student at Imperial College of Science and Technology. Graduate of London University. Chemistry (1st Class Hons.). A.R.C.S. (1st Class Chemistry). (*Signed by*) H. B. Baker, M. A. Whiteley, M. Carlton.

ESDAILE, RALPH MARGRAVE, the Lytle Coal Co., Ltd., Minerville, Pa., U.S.A. British. Chemist to the Lytle Coal Co., Ltd., Minerville, Pa., U.S.A. Trained at Finsbury Technical College, 1919–1923. Desires to receive the publications of the Chemical Society. Awarded Diploma, July, 1922, A.C.G.F.C. (*Signed by*) A. J. Hale, H. M. Atkinson, R. J. Seal.

FLACK, EDWARD HUGH ST. CLAIR, 9, Bridge Street, Cambridge. British born subject. Research Student in Organic Chemistry, Univ. of Cambridge. M.Sc. (Univ. of S. Africa). (*Signed by*) W. J. Pope, W. H. Mills, R. C. Odams.

FOOTNER, HENRY BELL, Great Dean, nr. Christchurch, Hants. British. Chemist. B.Sc. (Lond.), 1st Hons. Chemistry. 1922–1924, Research work on reactions of Alkyl Thiosulphates and Allied Compounds—publication pending. (*Signed by*) Samuel Smiles, C. Montague Bere, Hubert Painter.

GEOGHEGAN, DESMOND, 13, Port View, Heavitree, Exeter. British. Analytical Chemist. Three years pupil-assistant to T. Tickle, Esq., Devon County Analyst; two and a half years' experience in Practical Organic Chemistry and General Chemical Analysis at University College, Exeter, under Prof. W. H. Lewis. Educated at Sherborne School, Dorset, and at Douai School, Berks. Desire Fellowship, to have use of the Library, and

to keep in touch with modern research through the publications of the Society. (*Signed by*) Thomas Tickle, S. Glasstone, F. Southerden, R. King, W. H. Lewis.

GIBBY, CLIFTON WILLIAM, "The Rise," Foxley Lane, Purley, Surrey. British. Research Worker in Chemistry. Three years' study of Chemistry at University College, London, including a year's research with Professor Irvine Masson. Honours B.Sc. in Chemistry. A.I.C. by Exam. Now appointed Research Assistant to Mr. A. C. Egerton, at the Clarendon Laboratory, Oxford. (*Signed by*) F. G. Donnan, Henry Terrey, L. F. Gilbert.

GIBSON, REGINALD OSWALD, 41, Peak Hill, Sydenham, S.E. 26. British. Research Chemist. Bachelor of Science (London), 1924. Associate of the Institute of Chemistry, 1924. (*Signed by*) F. G. Donnan, W. E. Garner, O. L. Brady, I. E. Weber, V. W. Slater.

GIMINGHAM, CONRAD THEODORE (F.I.C.), Haddon House, Aarenbury Lane, Harpenden, Herts. British. Research Chemist, Insecticides and Fungicides Dept., Rothamsted Experimental Station, Harpenden, Herts. Research and Advisory Work in Agric. Chemistry at University of Bristol, 1909–1919. Research Work, Chemical Warfare Dept., 1916–1919. Chemist, Research Dept., Olympia Agric. Co., 1920–1923. Since then at Rothamsted Experimental Station. Various papers on Agric. Chem. subjects in *Jour. Agric. Sci.*, *Ann. App. Biol.*, etc. (*Signed by*) E. J. Russell, H. J. Page, H. W. Dudley.

GOODSPEED, JONATHAN, 36, Vicarage Lane, East Ham, E. 6. Student. Chemistry Student at East London College. (*Signed by*) J. R. Partington, E. E. Turner, B. D. Shaw.

GREENHALGH, RICHARD, 139, Stuart Street, Clayton, Manchester. British. Research work at Manchester University for M.Sc. Degree. Degree of B.Sc. in Chemistry Honours at Manchester University, Class II, Division I. (*Signed by*) Arthur Lapworth, Henry Stephen, Frederick Challenger, Fred Fairbrother, Colin Campbell.

GRIFFITH, ROBERT OWEN, Muspratt Laboratory of Physical Chemistry, Liverpool University. British. Lecturer in Physical Chemistry, Liverpool University. B.Sc., 1st Class Hons. Chem. (Liverpool), 1914; M.Sc., 1915; A.I.C., 1915–1918. Chemist under D.I.H.E., Liverpool. 1919, Lecturer in Physical Chemistry, Liverpool University. *Publications :* "Einstein's Law of the Photochemical Equivalent," Appendix VII. Lewis's "System of Physical Chemistry," Vol. 3, 3rd edition. Sections "Chemical Equilibrium" and "Reaction Velocity" in "Tables Annuelles de Constanter," Vol. 5 (in print). Papers in *J.C.S.* : (1) 1916, **109**, 67; (2) 1917, **111**, 389; (3) 1921, **119**, 1948; (4) 1923, **123**, 2752; (5) 1923, **123**, 2767. Also *Trans. Faraday Soc.*, 1921, **17**, 525. (*Signed by*) W. C. M. Lewis, F. C. Guthrie, E. C. C. Baly, I. M. Heilbron.

HAILWOOD, ANTHONY JAMES, Hazel Bank, Hazel Road, Altrincham. British. Research Chemist in the British Dyestuffs Corporation, Ltd., Manchester. Formerly on the manufacturing staff of the same Corporation. B.Sc. with 1st Class Honours in Physics (Manchester University). *Signed by*) W. H. Perkin, G. R. Clemo, S. C. Bate.

HISCOCKS, EDWARD STANLEY, 5, Rosehill, Swansea. British. Research Student, Chemistry Dept., University College, Swansea. Part-time Lecturer in Chemistry to the Municipal Technical College, Swansea. Hons. Graduate (Wales) in Chemistry. Part-time Lecturer in Physical and Inorganic Chemistry to the Municipal Technical College, Swansea. (*Signed by*) J. E. Coates, Leonard E. Hinkel, Ernest E. Ayling.

HODGSON, HERBERT HENRY, M.A. (Cambridge), B.Sc. (London), Ph.D. (Heidelberg), F.I.C., 136, Paley Road, Bradford. British. Head of Colour Chemistry Dept., Technical College, Huddersfield, since Sept. 1918. Previous posts, 1908–1912, Lecturer and Research Chemist, Technical College, Bradford; 1912–1915, Head of Chemical Dept., Northern Polytechnic Institute, London, N.; 1915–1918, Chief Chemist to Messrs. Brotherton & Co. at Birmingham and Stourton (Leeds). *Papers :* (1) "Dissertation," Heidelberg, 1908; (2) "Some Reactions of Phenyl Iodide, Chloride, and Iodosobenzene Acetate," *Proc. Camb. Phil. Soc.*, 1908; (3) "Isomere organische Magnesiumverbindungen" (with J. Schmidlin), *Ber.*, **41**, 430–437; (4) "Triphenylessigsäure und Tritolylessigsäure" (with J. Schmidlin), *Ber.*, **41**, 438–447; (5) "The Iodination of Phenols, etc." (with W. M. Gardner), *J.C.S.*, 1909, **95**, 1819–1827; (6) "The Development of Sulphuric Acid from Sulphide Dyestuffs and from Free Sulphur" (with W. M. Gardner), *J. Soc. Chem. Ind.*, 1910; (7) "The Action of Sulphur on Amines. Part I. *o*-Toluidine," *J.C.S.*, 1912, **101**, 1693–1701; (8) "The Action of Sulphur on Amines. Part II. Aniline," *J.C.S.*, 1914, **105**, 952–956; (9) "Nitrosation of Phenols. Part I. 3-Chloro-4-nitrosophenol and its Conversion into Two Isomeric Chloroquinone Monoximes" (with F. H. Moore), *J.C.S.*, 1923, **123**, 2499–2507; (10) "The Preparation of 2- and 4-Nitro-1-naphthols" (with E. Kilner), *J.C.S.*, 1924, **125**, 808–811; (11) "Direct Sulphuration of Aniline," *J.C.S.*, 1924, **125**, 1855–1858; (12) "Mononitration of *p*-Chlorotoluene" (with P. Anderson), *J.C.S.*, Oct. Notes, 1924; 4 papers now before the Publication Committee. *Patents :* Some New Sulphur Compounds and Dyestuffs therefrom, 1912; Preparation of Meta Halogenated Phenols, Brit. Pat. 200714; Preparation of Dihalogenated Fluoranes, Brit. Pat. 205254; Preparation of Tautomers of Nitroso-*m*-halogenated Phenols, Brit. Pat. 206734; 2 now filing on *m*-Hydroxybenzaldehyde and Azo Dyestuffs from Alkyl Thiol Amines. (*Signed by*) James Bruce, L. Gordon Paul, R. W. Merriman.

HUGHES, DAVID, 18, Holmes Grove, Westbury on Trym, Bristol. British. Chemist. At present on the Stuff of British Colloids, Ltd. Passed Qualifying Examination of the Pharmaceutical Society, 1894. Engaged for 10 years in Chemical and Clinical Laboratory Work on my own account in Bath and Clifton. Studied Bacteriology under Prof. Stanley Kent, Bristol University. Co-operated with Dr. A. L. Flemming, Bristol, in a monograph on the Spectroscopic Examination of Blood in Ethyl Chloride Anæsthesia. Desirous of keeping up to date in developments of Chemical Science and to be allowed the privilege of the Library. (*Signed by*) John Macvie Hill, Archibald Macpherson, John F. Ward, Geo. A. Turner.

HUGHES, KATHLEEN HARRIET, 8, Ormiston Drive, Knock, Belfast. British. Lecturer in Pure and Applied Chemistry, Municipal College of Technology, Belfast. Lecturer in Chemistry, M.C.T.B., 1920–1924. Temporary Assistant Chemist, Government Laboratory, Strand, 1917–1920. (*Signed by*) Henry Wren, Theophilus Harper, James W. Porter.

HUNT, ARTHUR FREDERICK, 6, Seabrooke Cottages, Front Lane, Cranham (nr. Upminster), Essex. Chemical Research Student. B.Sc. (Lond.), 1st Class Hons. Research Student at East London College under Dr. E. E. Turner. (*Signed by*) J. R. Partington, Elwyn Roberts, D. C. Jones, E. E. Turner.

INGHAM, BERTRAM HOBART, Yew Bank, Langham Rd., Bowdon, Cheshire. British. Research Student. B.Sc. Hons., Victoria University, Manchester (*Signed by*) Arthur Lapworth, F. P. Burt, J. E. Myers, Henry Stephen, R. Robinson.

JOHNSON, JOHN DOBNEY, 6, Edward St., Loughborough, Leics. British. Research Student. B.Sc. Hons., London. Royal Scholar. Research Student. (*Signed by*) Jocelyn Thorpe, M. A. Whiteley, G. A. R. Kon, Arnold Stevenson.

JOHNSON, WILFORD JORDAYNE, "Devanha," South Rd., Brighton Beach, Victoria. Licensed Gold Assayer and Chemical Analyst. Associate, Australian Chemical Institute. 1913–1922 (except for War Service), Assistant to Mr. Henry W. Levy, Assayer and Metallurgical Chemist, Melbourne, Australia. September 1922 to date, in partnership with Mr. Henry W. Levy, in private practice as Assayers and Metallurgical Chemists. (*Signed by*) D. O. Shiels, Henry W. Levy, Robert Law.

JONES, CECIL BRELLISFORD OAKES, Old Sewage Works, Whitley, Coventry. British. Analytical Chemist to the Coventry City Council. Four years assistant to W. D. Scouller, Esq., M.Sc., A.I.C., F.C.S. Ten years chief assistant to John Haworth, Esq., F.I.C., F.C.S. Author of "Sewage Works Analyses" (*Surveyor*, April 25th, 1924). (*Signed by*) John Haworth, W. D. Scouller, James H. Kershaw.

JONES, WILLIAM WENALLT, 19, White Hart Lane, Wood Green, N. 22. British. Assist. Chemist, The British Drug Houses, Ltd., Graham St., City Road, N. 1. B.Sc. Wales, June 1922; 2nd Class Honours Chemistry. M.Sc. Wales, June 1924. One session's Research Experience at the University College of North Wales, Bangor. (*Signed by*) Francis H. Carr, Charles Alex. Hill, S. Sugden.

KENNEDY, ALAN RICHMOND, 88, Sellons Avenue, Harlesden, N.W. 10. British. Assistant Chemist (Thomas de la Rue & Co., 110, Bunhill Row, E.C.). Undergraduate (University of London) in Faculty of Science (graduation, 1925). Employed in commercial Laboratory (founded by Dr. Hugo Müller). Desirous of receiving Society's literature concerning particularly modern researches in Organic Chemistry. (*Signed by*) Hubert L. Lucking, P. C. L. Thorne, E. de Barry Barnett, Henry J. S. Sand.

KENYON, FRANK, Power Station, Creekmouth, Barking, Essex. British. Chemist to the New Electrical Station, Barking, County of London Electric Supply Co., Ltd. Associate of the Institute of Chemistry, Branch D. (*Signed by*) J. Kenyon, J. L. White, Harold Hunter.

KING, FREDERICK ERNEST, 101, Cavendish Road, Highams Park, Essex. British. Student (Research at East London College). (*Signed by*) J. R. Partington, E. E. Turner, D. C. Jones.

KNOTT, ERIC, 21, West Richmond St., Edinburgh. British. Lecturer in Chemistry and Physics at the Royal Dispensary and School of Pharmacy of Edinburgh. Student of the Royal Dispensary and School of Pharmacy of Edinburgh, 1919–21, from which place I obtained the Qualifying Certificate of the Pharmaceutical Society and also the Diploma of Pharmaceutical Chemist. For past three years engaged as Lecturer at above School in Chemistry and Physics. (*Signed by*) Russell G. Thin, A. Scott Dodd, William Duncan.

KRACOVSKI, JACOB, 11, Ernest St., London, E. 1. English. Research Student. B.Sc., 1st Class Hons. in Chemistry. At present engaged in research. (*Signed by*) Jocelyn Thorpe, G. A. R. Kon, M. A. Whiteley, E. H. Farmer.

LAMBOURNE, HERBERT, 44, Brighton Road, S. Croydon, Surrey. British. Head of the Chemistry Dept., Borough Polytechnic Institute, Borough Road, S.E. 1. Late Senior Lecturer in Organic Chemistry, University College, Nottingham. Research work on "Quinaldine and Derivatives," "Methyl-

stannonic Acid and Derivatives." M.A. (Cantab.), M.Sc. (Lond.), F.I.C. (*Signed by*) F. S. Kipping, J. B. Firth, E. B. R. Prideaux, F. C. Laxton.

LAWS, JOHN JOSEPH, 45, Fulham Rd., South Kensington. English. Chemist, Dentist, and Optician. Holding the Qualifying Certificate of the Pharmaceutical Society of G.B. (Lond.). Hon. Treasurer of the Chemists' Dental Society of Great Britain and Ireland (Reg. No. 15073). Hon. Gen. Secretary of the Institute of Chemists and Opticians. Examiner in Refraction to the Institute of Chemists and Opticians. Member of the Public Dental Services. At one time principal of the West End College of Chemistry and Pharmacy. Private tutor of Chemistry for many years. (*Signed by*) Percy Barrs, Robert W. Lindsey, James Harry Smith, Frank B. Arnold.

LE FEVRE, RAYMOND JAMES WOOD, 17, Broadway Avenue, St. Margarets, Twickenham, Mdx. British. University Undergraduate. Chemistry Student, East London College (2nd year of final). (*Signed by*) J. R. Partington, E. E. Turner, B. D. Shaw.

LEIPER, ALEXANDER JOHN SIMPSON, 74, Whitworth Road, South Norwood, London, S.E. 25. Scottish. Chemist. I wish to join the Chemical Society in order to keep in touch with up-to-date research and proceedings. I am an Associate of the Royal College of Science in Chemistry. (*Signed by*) M. A. Whiteley, Jocelyn Thorpe, James C. Philip.

LENNANE, ALFRED JAMES ANDREW, 22, Ryder St., St. James's, S.W. 1. British. Physician and Surgeon. Formerly Opium Analyst to the Indian Government. M.R.C.S., L.R.C.P. (*Signed by*) Frank Radcliffe, Thos. R. Owles, Samuel Gray Fenton.

LILEY, FREDERICK WILLIAM, 41, Beaconsfield Rd., West Croydon. British. Assistant, Croydon Borough Analyst. Student at King's College, London. 2 Years assistant to Croydon Borough Analyst. (*Signed by*) Lester Reed, Eric K. Rideal, Ed. Hinks.

LUNT, JAMES GILBERT, 17, York Avenue, Sefton Park, Liverpool. British. B.Sc. of Liverpool. Chemical Analysis, c/o Anglo-South American Meat Co., San Martin 235, Buenos Aires, Argentina. (*Signed by*) I. M. Heilbron, William Doran, Stanley J. C. Snedker.

MCVICKER, WILLIAM HAMILTON, 45, Wellington Park, Belfast. British. Chemical Research Student. B.Sc. (1st Class Honours), and M.Sc., Queen's University of Belfast. Musgrave Research Student, Queen's University of Belfast, 1923–25. Joint author of 7 papers as follows : *J.C.S.*, **123**, 642, 817, 820, 2147; **125**, 1743; *J. Amer. C. S.*, XLVI, 1351; *Phil. Mag.*, XLVIII, 628. (*Signed by*) A. Killen Macbeth, Ernest W. McClelland, A. W. Stewart, J. K. Marsh, H. Graham.

MANN, THOMAS, Alexander Terrace, Bransty, Whitehaven. British. Partner in firm of Hellon and Mann, Analytical and Consulting Chemists, Whitehaven. (*Signed by*) G. W. Martin, C. A. Mitchell, Bernard Dyer.

MASCARENHAS, VINCENT MARK, Bangalore. Indian Christian. Student, Indian Institute of Science, Bangalore. Bachelor of Arts of the University of Mysore with Chemistry as a main subject. Completed the work on the Chemistry of Indian Black Mustard Seed Oil, and that of Malabar Tallow (*Vateria Indica*) awaiting publication in the Journal of the Indian Institute of Science. (*Signed by*) J. J. Sudborough, M. O. Forster, Roland V. Norris.

MILES, FRANK DOUGLAS, Caldwell Road, West Kilbride, Ayrshire. English. Research Chemist. Asst. Lecturer in Inorganic Chemistry, Heriot-Watt College, Edinburgh, 1909–1915. Service in Dept. of Explosives Supply,

1915–1919. Senior Research Chemist, H.M. Factory, Gretna. Chief Research Chemist, Messrs. Burt, Boulton, and Haywood, 1919–1922. At present a member of the Research Section of Nobel Industries, Ltd. *Publications :* "Egyptian Blue," with H. P. Laurie and W. F. P. McLintock, *Proc. Roy. Soc.*, 1914. Also papers in *Proc. Roy. Soc. Edin.* (two, 1915), and in *Journ. Soc. Chem. Ind.*, 1920 and 1922. "A Volumetric Method for the Estimation of Lead," *J.C.S.*, 1915, **107**, 988; "The Solubility of Sulphur Dioxide in Sulphuric Acids" (with J. Fenton), *J.C.S.*, 1920, **117**, 59. Also author of forthcoming volume of Lunge's "Sulphuric Acid and Alkali" entitled, "Sulphuric Acid—Contact Process." (*Signed by*) John Weir, Norman Picton, W. Young.

NIGHTINGALE, EDWARD ARTHUR, 39, Pacific Rd., Fords Park Rd., Canning Town, E. 16. British. Commercial Analytical Chemist, Messrs. Burt, Boulton, and Heywood, Ltd., Coal Tar and Creosote Works, Silvertown, 1918–1920. Messrs. Pinchin, Johnson & Co., Paint and Varnish Manufacturers, Silvertown, 1920. Student at Borough Polytechnic for Paints, Oils, and Colours. Student at East Ham Technical College, Chemistry, 6 years' course. City and Guilds of London Institute, Coal Tar, 1st Class certificate. (*Signed by*) R. W. Griffiths, W. H. Barker, W. T. Clough.

OFFORD, FREDERICK WILLIAM, 66, Watford Road, Canning Town, London, E. 16. English. Analytical Chemist. National Certificate in Chemistry, "Higher" or "Advanced," 1923. Worked under J. Bendix, F.I.C., F.C.S. (1915–1920). (*Signed by*) E. W. Griffiths, E. G. Churchill, W. H. Barker.

OUTRIDGE, LIONEL EDWARD, "Fernhurst," The Avenue, Chingford, Essex. British. Research Student. B.Sc. (London), Honours Chemistry. Research student at East London College under Dr. D. C. Jones. (*Signed by*) J. R. Partington, Elwyn Roberts, D. C. Jones, E. E. Turner.

PARKER, THOMAS WEBSTER, Mildenhall, Suffolk. British. Chemist. Student at the Royal College of Science (London), 1919–23. A.R.C.S., 1921. Chemist to the Dartmoor China Clay Co. (*Signed by*) James C. Philip, M. B. Donald, A. B. P. Page.

PARKER, WILLIAM BAYLEY, F.I.C., 3, Murray Road, Rugby, Warwickshire. Chief Chemist (Research and Works), The British Thomson-Houston Co., Ltd., Rugby. Chief Chemist to B.T.H. from April 1902, and Author of "Specifications for Foundry Pig Irons," Pt. I and II., Proceedings British Foundrymens' Association, 1912–13 and 1906; "Specifications for Alloys for High Speed Superheated Steam Turbine Blading," Jnl. Inst. of Metals, No. 2, 1915; "Purchasing Specifications for Resins and Shellac," Jnl. Oil and Colour Chemists' Association, Vol. V, 1922; "Variation of Refractive Index and Density of Benzene with Temperature," W. B. Parker and G. Thompson, *Trans. Chem. Soc.*, 1922, Vol. **121**. (*Signed by*) Percy F. Frankland, S. Judd Lewis, Gartha Thompson.

PARSONS, STUART RUSSELL, 65, Oakfield Road, Ilford. Research Student (Chemistry). B.Sc. (Lond.), Honours Chemistry. A.I.C. Research student at East London College, under Dr. E. E. Turner. (*Signed by*) J. R. Partington, Elwyn Roberts, D. C. Jones, E. E. Turner.

PAYNE, WILLIAM SAMUEL, Moseley House, Rounds Green, Oldbury. English. Chemist. 5 years Laboratory Steward, Oldbury Secondary Schools. 3 years Laboratory Steward, Oldbury Technical Schools. 2 years Demonstrator and Assistant Chemistry Master, Oldbury Technical Schools. U.E.I. Certificate in Advanced Inorganic and Physical Chemistry, 1924. (*Signed by*) John G. Clarke, C. Mansfield Swain, E. Pritchett.

PIERSON, KENNETH JOHN, 105, Winterbourne Road, Thornton Heath.

British. Two years Assistant to the Croydon Borough Analyst. (*Signed by*) Lester Reed, Ed. Hinks, Henry P. Stevens.

PIKE, RICHARD EDWIN, 6, Haymarket, London, S.W. 1. British. Student. Pass B.Sc. (Lond.). Studying for Honours at Royal College of Science since October, 1923. (*Signed by*) H. B. Baker, H. F. Harwood, M. A. Whiteley, James C. Philip.

PLUMBRIDGE, DOUGLAS VICTOR, 21, Heathfield Rd., Wavertree, Liverpool. British. Research Chemist. Ph.D. (Munich). A.R.C.Sc. (London). A.I.C. On the staff of the Chemical Dept., Messrs. The Salt Union, Ltd., Western Point, Cheshire. (*Signed by*) A. Bramley, Norman M. Comber, James C. Philip.

PRESTON, JOHN MASSEY, The Dower House, Euxton, Chorley, Lancs. British. Private Research in Chemistry. B.Sc., 2nd Class Hons. Chem. (Liv.). A.I.C. (*Signed by*) E. C. C. Baly, H. Rogerson, F. C. Guthrie.

RAPER, RICHARD, 12, Mill Lane, Cambridge. British. Research Student. 1st Class Honours in Nat. Sci. Tripos, Parts I and II (Chemistry) of Cambridge University. Two years' research work under Dr. Mills, F.R.S., and two years' experience as Demonstrator in Cambridge University Chemical Laboratory. (*Signed by*) W. J. Pope, W. H. Mills, H. R. Stevens.

RULE, JOHN FREDERICK JAMES, 29, Alexandra Road, East Ham, E. 6. Research Student. Have passed the B.Sc. Hons. examination in Chemistry of London University, and I am undertaking Research Work under Professor Partington. (*Signed by*) J. R. Partington, W. H. Patterson, E. E. Turner.

SCORAH, LESLIE VIVIAN DONALD, 139, Dodworth Road, Barnsley (Yorks). British. Research Student. B.Sc. (Hons. Chem.) Sheffield. A.I.C. (*Signed by*) W. P. Wynne, G. M. Bennett, F. G. Tryhorn, Arthur W. Chapman.

SHEPPARD, GEORGE FREDERICK, 72, Mortlake Rd., Kew Gardens, Surrey. British. Chemist, Cl. II. Department of Government Chemist. Position as above. Student, Royal College of Science, London, 1900–2, passed examinations of the Associateship Course in Chemistry for Revenue Students. Past experience: Analytical work in above Department since November, 1902. (*Signed by*) Thos. J. Cheater, W. Williamson, Robert Robertson, Geo. Stubbs.

SHEVLIN, JOSEPH THOMAS, "Corwen," Frederick Road, Wylde Green, Birmingham. British. Patent Agent. Associate of the Chartered Institute of Patent Agents. Associate of the Institute of Physics. Associate of the Institution of Electrical Engineers. Fellow Physical Society of London. I am desirous of becoming a Fellow of the Society in order that I may be well versed in the more recent developments in Chemistry. (*Signed by*) G. G. Henderson, F. J. Wilson, E. W. Moss.

SMETHURST, ARTHUR FREDERICK, Nippon, Cedar Road, Sutton, Surrey. British. Undergraduate. Student in Chemistry at the Royal College of Science since October, 1922. (*Signed by*) H. B. Baker, H. F. Harwood, M. A. Whiteley, James C. Philip.

SMEWING, ETHEL MINNIE, 42, Park Avenue South, Crouch End, N. 8. British. Teacher. B.Sc. Hons. Chem. (Lond.). Teacher of Chemistry. (*Signed by*) J. F. Spencer, M. S. Crewdson, H. Crompton.

SMITH, ALTON EWART CLARENCE, Breydon, Oakmount Avenue, Southampton. British. Lecturer in Physical Chemistry, University College of Southampton. Lecturer as above since 1919. (*Signed by*) D. R. Boyd, C. K. Ingold, C. F. Cross.

SNELUS, SUZANNE MABEL LAVINIA, 67, Elgin Mansions, W. 9. British. Analytical and Consulting Chemist. Member of the Pharmaceutical Society

Associate of the Institute of Chemistry. Senior Analyst to Messrs. Parke Davis & Co. Chemist in Charge to Messrs. J. C. Arnfield & Sons. Assistant Research worker, Dr. F. W. Passmore. (*Signed by*) P. C. L. Thorne, E. de Barry Barnett, Henry J. S. Sand.

Spiers, Claude Hyman, 34, Brondesbury Road, N.W.6. British. Research Chemist. M.A. (Cambridge). B.Sc. (London). Ph.D. (Cambridge). *T.*, 1924, **125**, 450. (*Signed by*) Jocelyn Thorpe, Arnold Stevenson, G. A. R. Kon, H. M. Spiers.

Stern, Harold Jacob, 17, Croxteth Grove, Sefton Park, Liverpool. British. Chemist to firm of paper stainers. Research on Photosynthesis, Liverpool University, 1921–22. Research in Organic Chemistry under Prof. W. H. Perkin, Oxford, 1922–24. B.Sc. (Hons. Chem.), Liv., 1921. Ph.D., Liv., 1923. B.Sc., Oxon., 1924. Baly, Heilbron, and Stern, 1923, **123**, 185. (*Signed by*) W. H. Perkin, Fredk. A. Mason, G. R. Clemo, S. G. P. Plant, E. Hope, F. Raymond Ing.

Still, Charles James, 50, Queen's Parade, Bangor, Co. Down. British. Lecturer in Bleaching and Dyeing, Municipal College of Technology, Belfast. B.Sc. (Lond.); M.Sc. and Ph.D. (Queen's Univ., Belfast). Joint author of several communications (in collaboration with Dr. Henry Wren) on Diphenylsuccinic Acids, published in *J. Chem. Soc.* (*Signed by*) Henry Wren, James W. Porter, Theophilus Harper.

Syed, Mohammad Hassan, Rupar (Amballa), India. Indian Muhammadan. Demonstrator, Maclagan Engineering College, Lahore, India. B.Sc. (Chemistry), Punjab University. Desirous of being in touch with the recent work in Chemistry. (*Signed by*) S. D. Muzaffar, S. J. Kohli, Edwin Theodore Dean.

Thomas, Mary Beatrice, Girton College, Cambridge. Lecturer in Chemistry and Director of Studies in Natural Sciences. Lecturer in Chemistry, Girton College, Cambridge. (*Signed by*) W. J. Pope, F. G. Hopkins, A. Hutchinson.

Timms, Eric Spencer, 96, Grange Park Rd., Thornton Heath. Research Student (Chemistry). B.Sc. (London), Honours Chemistry. Research Student at East London College under Dr. D. C. Jones. (*Signed by*) J. R. Partington, Elwyn Roberts, D. C. Jones, E. E. Turner.

Titterington, Eric, Abdine Palace, Cairo, Egypt. British. Private Chemist to H.M. the King of Egypt. Member of the Pharmaceutical Society of Great Britain. Engaged in the examination of food and all drugs used in the household of His Majesty. Attached to the Medical Staff of His Majesty for Physiological work. Appointed Examiner in Chemistry to the Cairo Medical School, 1924. (*Signed by*) Ayerst Henham Hooker, W. Morris Colles, C. S. Gibson.

Tudhope, Thomas Martin Aitken, 8, Anson Road, Tufnell Park, London, N. 7. British. Temporary Assistant Chemist in the Government Laboratory. B.Sc. (St. Andrews), with Special Distinction in Chemistry. Ph.D. (St. Andrews). Carnegie Research Scholar for two years (sessions 1921–1923). Engaged in Chemical Research at University College, Dundee, for three years. "Optically Active β-Phthalimino-β-phenylpropiophenones," McKenzie and Tudhope, *J.C.S.*, 1924, **125**, 923. (*Signed by*) Robert Robertson, Geo. Stubbs, J. J. Fox.

Vass, Charles Cyril Norrey, "Holmleigh," Harboro' Rd., Kingsthorpe, Northampton. British. Student. B.Sc. Ordinary (Leeds, 1924). (*Signed by*) C. K. Ingold, P. K. Dutt, W. A. Wightman, H. M. Dawson, R. Whytlaw-Gray.

VILLAGE, JOHN HARRY, 61, Broxholme Lane, Doncaster. British. Chemist. B.Sc. Hons. (Lond.). For 5 years engaged as Assistant Chemist by the Koppers' Coke Oven Co. under G. E. Foxwell, M.Sc., A.Inst.P., F.C.S. Here I have assisted in numerous researches on coal and its by-products. Now in charge of Laboratory. (*Signed by*) G. E. Foxwell, P. G. Mander, G. D. Crosley.

VOGEL, ISRAEL, 16, Wellclose Square, London, E. 1. Research Student in Chemistry at the East London College. B.Sc., 1st Class Honours Chemistry. Neil Arnott Scholar and Bronze Medallist in Chemistry of the University of London. Author of "The Constitution of the Thionic Acids," *Chem. News*. **128**, 325–327, 342–345, 361 (1924). (*Signed by*) J. R. Partington, E. E. Turner, D. C. Jones.

WILSON, JOHN, 115, Canterbury Rd., North Harrow. British. Student engaged in Biochemical Research, Imperial College of Science and Technology, M.Sc. (Sheffield). (*Signed by*) S. B. Schryver, Harold Mastin, J. Knaggs.

WALKER, NELLIE, 15, Fintry Place, Broughty Ferry, Forfarshire. Lecturer in Chemistry, University College, Dundee (University of St. Andrews). M.A., B.Sc., Ph.D. (St. Andrews). Conjoint author of the following papers in the Journal of the Chemical Society: *J.C.S.*, 1914, **105**, 1131; *J.C.S.*, 1915, **107**, 1685; *J.C.S.*, 1922, **121**, 349; *J.C.S.*, 1923, **123**, 2875. (*Signed by*) Alex. McKenzie, J. C. Irvine, John S. W. Boyle.

WARD, WILLIAM JOSEPH VICTOR, 41, Marlowe Rd., Cambridge. English. Research Student. 1st Class Natural Sciences Tripos, Part II, Chemistry 1924, Cambridge. (*Signed by*) W. J. Pope, W. G. Palmer, W. H. Mills.

WHIPP, JAMES EWART, 15, St. John's St., Longsight, Manchester. Pharmacist. Student of the Institute of Chemistry. Fellow of the Biochemical Society. Fellow of the Royal Microscopical Society. Member of the Society of Chemical Industry. (*Signed by*) Henry Garnett, Harry Brindle, Chas. Turner.

WHITEHEAD, ALAN DOUGLAS, "Trevorian," 90, West Hill, Putney, S.W. 15. British. Chemist. Student in Dept. of Chemistry, University College, London, Sessions 1921–22, 1922–23, 1923–24. B.Sc. (Lond.), Honours in Chemistry. (*Signed by*) F. G. Donnan, A. Greeves, W. E. Garner.

WILLIAMS, LESLIE THOMAS DOUGLAS, 23, Queen's Gate Gardens, S.W. 7. British. Student. Associateship of the Royal College of Science. I am now performing research at the above college and am desirous of keeping abreast with modern progress in science. (*Signed by*) G. A. R. Kon, M. A. Whiteley, H. L. Riley.

WYLDE, JOHN HENRY, 203, Boleyn Rd., Forest Gate, E. 7. English. Asst. Chemist, Laboratory of the Gas Light and Coke Coy, Stratford Station. Student at the East Ham Tech. College. National Cert. in Chemistry, Part-time Course, Higher or Advanced (distinction Inorganic Chemistry). City and Guilds of London, Gas Engineering, Ordinary and Honours. (*Signed by*) E. W. Griffiths, W. H. Barker, W. T. Clough.

YARSLEY, VICTOR EMMANUEL, The View, Highfield, Chasetown, nr. Walsall. British. Salter Research Fellow, 1924. B.Sc., 1st Hons., School of Chemistry, B'ham. Associate of the Institute of Chemistry. (*Signed by*) G. T. Morgan, H. D. K. Drew, C. E. Wood.

The following Certificates have been authorised by the Council for presentation to ballot under Bye-Law I (2).

NAIR, SADASHIV PARASHURAM, Nair Building, Lamington Road, Bombay. Indian (British subject). Pharmaceutical Chemist, i/c Powell's Pharma-

ceutical and Chemical Laboratory. Ph.G. (Boston). Graduate of the Massachusetts College of Pharmacy, Boston, Mass. Member of the American Pharmaceutical Association. At present working on finding out the commercial utility of some of the indigenous plants. My aim in joining the Society is to come in contact with the members of the Society and enjoy the privileges given by the same. (*Signed by*) H. B. Tilden.

San, Moung Ba, B.A., 3, Stewart Road, Rangoon, Burma. Burmese. Assistant to the Chemical Examiner to the Government of Burma and Demonstrator in Physics and Chemistry at the Burma Government Medical School, Rangoon. Graduate of Calcutta University (1911–12). Winner of Chemistry Prize (term 1911–12) in the then Govt. College, Rangoon, now the Rangoon University College. No publications yet. 11 years' analytical experience in the Chemical Examiner's Laboratory, comprising examination of Mineral Oils, Drugs, Foodstuffs, Public Water supplies, and also Toxicological and Medico-legal analysis as well as Analysis of Ores, Minerals, and other commodities. (*Signed by*) Thein Kin, William Dallas.

ADDITIONS TO THE LIBRARY.

I. *Donations.*

Abderhalden, Emil. [Editor.] Handbuch der biologischen Arbeitsmethoden. Abt. III. Physikalisch-chemische Methoden, Teil A, Heft iv. Abt. XI. Methoden zur Erforschung der Leistungen des Pflanzenorganismus, Teil 3, Hefte i and ii. Berlin 1924. *Mk.* 9, 9·60, 7·50. (*Recd.* 23/12/24.)

From the Publishers: Herren Urban & Schwarzenberg.

American Ceramic Society. Bibliography of magnesite refractories. Columbus 1924. pp. 8 + 41. (*Reference.*)

—— Bibliography of silica refractories. Columbus 1924. pp. 125. (*Reference.*) From the Society.

Annales de Chimie. Vols. II., LXIX., LXXXII., LXXXIII. Paris 1789, 1809, 1812. (*For circulation.*) [Incomplete.]

From Professor C. S. Gibson.

Birkbeck College. Centenary Lectures 1823—1923. London 1924. pp. xiv + 178. (*Recd.* 5/1/25.) From Dr. G. Senter.

Brame, John Samuel Strafford. Fuel: solid, liquid and gaseous. 3rd edition. London 1924. pp. xvi + 388. ill. 18*s.* net. (*Recd.* 19/11/24.)

From the Publishers: Messrs. Edward Arnold & Co.

Levy, Stanley Isaac. The rare earths: their occurrence, chemistry and technology. 2nd edition. London 1924. pp. xvi + 362. ill. 18*s.* net. (*Recd.* 19/11/24.)

From the Publishers: Messrs. Edward Arnold & Co.

Niggli, Paul. Lehrbuch der Mineralogie. 2nd edition. I.

Allgemeine Mineralogie. Berlin 1924. pp. xvi + 713. ill. *Gm.* 24. (*Recd.* 18/12/24.)

From the Publishers: Gebrüder Borntraeger.

PHYSICAL SOCIETY OF LONDON, 1874—1924. Proceedings at the Jubilee Celebration Meetings, March 20, 21 and 22, 1924. [London 1924.] pp. vi + 72. ill. (*Reference.*) From the Fleetway Press.

PHYSICS IN INDUSTRY. Lectures delivered before the Institute of Physics. Vol. II. By JOSEPH WILLIAM MELLOR, A. E. OXLEY, and CECIL HENRY DESCH. London 1924. pp. 48. ill. 3*s.* net. (*Recd.* 4/12/24.)

From the Publishers: The Oxford University Press.

REVUE GÉNÉRALE DES COLLOÏDES et de leurs applications industrielles. Year I, etc. Paris 1923 +. (*Reference.*)

From the Faraday Society.

SCHOTZ, SCHACHNA PEISACH. Synthetic organic compounds. London 1925. pp. 412. ill. 45*s.* net. (*Recd.* 19/12/24.)

From the Publishers: Messrs. Ernest Benn.

SYDNEY TECHNICAL COLLEGE CHEMICAL SOCIETY. Journal and Proceedings for 1922. Vol. I. Sydney 1924. pp. 88. ill. (*Reference.*) From the Society.

THOMS, HERMANN. [Editor.] Handbuch der praktischen und wissenschaftlichen Pharmazie. Vol. II. Part ii. Vol. III. Part i. Berlin 1924. pp. 288, 288. ill. *Mk.* 20. (*Recd.* 29/12/24.)

From the Publishers: Herren Urban & Schwarzenberg.

URBAIN, GEORGES. L'énergétique des réactions chimiques. Leçons professées a la Sorbonne. Paris [1924]. pp. viii + 268. ill. 25 *fr.* (*Recd.* 24/11/24.)

From the Publisher: M. Gaston Doin.

WAALS, JOHANNES DIDERIK VAN DER. The continuity of the liquid and gaseous states. (From *Physical Memoirs*, 1890, **1**.) pp. vi + [164]. (*Recd.* 18/12/24.) From Sir Richard Threlfall.

II. *By Purchase.*

ABU 'L-QĀSIM MUḤAMMAD. Kitāb al-'ilm al-muktasab fī zirā'at adh-dhahab. Book of knowledge acquired concerning the cultivation of gold. The Arabic text edited with a translation and introduction by ERIC JOHN HOLMYARD Paris 1923. pp. vi + 62 + 54. (*Recd.* 25/10/24.)

ANGELI, ANGELO. Die Analogien zwischen dem Verhalten einiger Derivate des Benzols und dem der entsprechenden Derivate der aliphatischen Reihe. Translated from the Italian by FRITZ ARNDT. (Sammlung, Vol. XXVIII.) Stuttgart 1924.

ASSOCIATION OF OFFICIAL AGRICULTURAL CHEMISTS. Journal. Vol. VII., etc. Washington 1923 +. (*Reference.*)

GEERLIGS, HENDRIK COENRAAD PRINSEN. Cane sugar and its manufacture. 2nd edition. London 1924. pp. x + 342. 20*s.* net. (*Recd.* 13/1/25.)

GREAVES, RICHARD HENRY, and WRIGHTON, HAROLD. Practical microscopical metallography. London 1924. pp. x + 125. ill. 16*s.* net. (*Recd.* 24/11/24.)

HANDBUCH DER BIOCHEMIE DES MENSCHEN UND DER TIERE. Edited by CARL OPPENHEIMER. 2nd edition. Vol. I, etc., Jena 1923 +. (*Recd.* 27/11/24.)

HEYN, E. Die Theorie der Eisen-Kohlenstoff-Legierungen: Studien über das Erstarrungs- und Umwandlungsschaubild, nebst einem Anhang:—Kaltrecken und Glühen nach dem Kaltrecken. Edited by E. WETZEL. Berlin 1924. pp. viii + 186. ill. *Gm.* 12. (*Recd.* 4/12/24.)

HIGGINS, SYDNEY HERBERT. A history of bleaching. London 1924. pp. viii + 176. ill. 10*s.* 6*d.* net. (*Recd.* 13/1/25.)

INSTITUTION OF AUTOMOBILE ENGINEERS. Report of the Empire Motor Fuels Committee: embodying other allied researches. London [1924]. pp. xii + 352. ill. 10*s.* 6*d.* net. (*Recd.* 24/11/24.)

INTERNATIONAL RUBBER CONFERENCE. The Rubber Conference, Brussels, 1924: being the Official Report . . . together with the papers read and the discussions thereon. London 1924. pp. 218. ill. 5*s.* net. (*Recd.* 25/11/24.)

KENT-JONES, DOUGLAS WILLIAM. Modern cereal chemistry. Liverpool 1924. pp. x + 324. ill. 25*s.* net. (*Recd.* 24/11/24.)

KILLEFFER, D. H. Eminent American chemists: a collection of portraits of eminent Americans in the field of chemistry from the earliest days of the Republic to the present, together with short sketches of the work of each. New York [1924]. pp. v + 33 +33 portraits. (*Reference.*) 30*s.* net.

KISSLING, RICHARD. Chemische Technologie des Erdöls und der ihm nahestehenden Naturerzeugnisse: Erdgas, Erdwachs und Erdpech (Asphalt). 2nd edition. Braunschweig 1924. pp. xviii + 804. ill. *Gm.* 25. (*Recd.* 10/12/24.)

MARTIN, LOUIS CLAUDE. Optical measuring instruments: their construction, theory, and use. London 1924. pp. x + 270. ill. 17*s.* 6*d.* net. (*Recd.* 13/1/25.)

[MERCK, EMIL.] Merck's Reagenzien-Verzeichnis: enthaltend die gebräuchlichen Reagenzien und Reaktionen geordnet nach Autorennamen. 5th edition. [Darmstadt] 1924. pp. vi + 656. (*Reference.*) *Gm.* 18.

MOORE, RICHARD B. [and others]. Analytical methods for

certain metals including cerium, thorium, molybdenum, tungsten, radium, uranium, vanadium, titanium, and zirconium. (Bureau of Mines Bulletin, No. 212.) Washington 1923. pp. xviii + 326. ill. 3*s*. 6*d*. net. (*Recd*. 29/12/24.)

Otto, M. P. L'industrie des parfums d'après de la chimie moderne. Notations et formules. 2nd edition. Paris 1924. pp. xliv + 688. ill. 85 *fr*. (*Recd*. 5/12/24.)

Randell, Wilfrid L. Michael Faraday (1791—1867). London 1924. pp. 192. ill. 4*s*. 6*d*. net. (*Recd*. 24/11/24.)

Ruska, Julius. Arabische Alchemisten. II. Ĝa'far alṢādiq, der sechste Imām. Mit einer Nachbildung der Handschrift Gotha A. 1292 (Haleb 338) in Manuldruck. Heidelberg 1924. pp. 128 + 62. *Gm*. 7.20. (*Recd*. 1/12/24.)

Sherman, Henry Clapp. Food products. 2nd edition. New York 1924. pp. xiv + 688. ill. 14*s*. net. (*Recd*. 25/11/24.)

Treadwell, W. D. Elektroanalytische Methoden. Berlin 1915. pp. x + 233. ill. (*Recd*. 24/11/24.)

United Kingdom. *Permanent Consultative Committee on Official Statistics*. Guide to current official statistics of the United Kingdom. Vol. II (1923): being a systematic survey of official statistics published mainly in 1923, together with an appendix relating to selected statistical publications issued prior to 1923. London 1924. pp. 306. (*Reference*.) 1*s*. net.

Weinland, Rudolf. Einführung in die Chemie der Komplex-Verbindungen (Wernersche Koordinationslehre) in elementarer Darstellung. 2nd edition. Stuttgart 1924. pp. xx + 538. ill. *Gm*. 24. (*Recd*. 24/11/24.)

Zipperer, Paul. Die Schokoladen-Fabrikation: eine Monographie der Kakaofrucht und ihrer Verwertung. 4th edition by Hermann Schaeffer and — Schröder. Berlin 1924. pp. viii + 338. ill. $5 net. (*Recd*. 13/12/24.)

III. *Pamphlets*.

Cohen, Barnett, Gibbs, H. D., and Clark, William Mansfield. Studies on oxidation-reduction. V. Electrode potentials of simple indophenols, each in equilibrium with its reduction product. (From the *U.S. Public Health Reports*, 1924, **39**.)

Evans, Edward Victor. Cantor Lectures on a study of the destructive distillation of coal. London 1924. pp. 49. ill.

Hunter, Harold. The chemical significance of optical dispersion. [London.] 1924. pp. 117. ill.

Robinovitch, Louise G., and Stiles, George W. A chemical basis for the treatment of tuberculosis: experiments on the action

of steapsin and insulin on tubercle bacilli. (From the *Amer. Rev. Tuberculosis*, 1924, 9.)

SCIENTIFIC AND INDUSTRIAL RESEARCH, Department of. *Food Investigation Board.* Special Report No. 20. The problems of apple transport overseas: a general survey and summary of the results obtained by a scientific expedition to Australia in 1923. By FRANKLIN KIDD and CYRIL WEST. London 1924. pp. vi + 16. ill.

—— *Fuel Research Board.* Technical Paper No. 10. Carbonisation of coal in continuous vertical retorts. A South Wales gas coal. (Mixture of Pentre and No. 3 Rhondda Seams from the Meiros Collieries, Llanharan.) London 1924. pp. iv + 26. ill.

SINNATT, FRANK STURDY, SIMPKIN, NEVILLE, and OWLES, ARCHIBALD BEWICK. The inorganic constituents of coal. Part IV. The melting point of coal ash. (*Lancs. & Cheshire Coal Research Assoc.* Bulletin No. 14.) London 1924. pp. 24. ill.

STERN, ARTHUR LANDAUER. Contributions to the chemistry of cellulose. I. Cellulose sulphuric acids. London 1894. pp. 28. (Two copies.)

TURNER, J. A. Mercurial poisoning: a report on poisoning from small quantities of mercurial vapor. (From the *U.S. Public Health Reports*, 1924, 39.)

UNITED STATES. *Department of Agriculture.* Department Bulletin No. 1149. Absorption and retention of hydrocyanic acid by fumigated food products. By EDWARD L. GRIFFIN [and others.] Washington 1923. pp. 16. ill.

—— —— Department Bulletin No. 1152. Soy and related fermentations. By MARGARET B. CHURCH. Washington 1923. pp. 26. ill.

—— —— Department Bulletin No. 1166. Apple by-products as stock foods. By G. P. WALTON and GEORGE L. BIDWELL. Washington 1923. pp. 40. ill.

—— —— Department Bulletin No. 1250. Relation between the composition of California cantaloupes and their commercial maturity. By EDWARD MACKAY CHANCE, C. G. CHURCH, and F. E. DENNY. Washington 1924. pp. 26. ill.

VOEGTLIN, CARL, JOHNSON, JAMES MCINTOSH, and DYER, HELEN. Viscosity and toxicity of arsphenamine solutions. (From the *U.S. Public Health Reports*, 1924. 39.)

WELCH, MARCUS BALDWIN. Notes on strength of timbers: with list of transverse tests on specimens in the Technological Museum. (*Sydney Technological Museum Bulletin*, No. 6.) Sydney 1923. pp. 12.

Tech. O.K.

PROCEEDINGS

OF THE

CHEMICAL SOCIETY.

Ordinary Scientific Meeting, Thursday, February 5th, 1925, at 8 p.m., Professor W. P. WYNNE, D.Sc., F.R.S., President, in the Chair.

The following were formally admitted Fellows of the Chemical Society: E. Lakeman, W. Kilroy, D. McKie, R. F. Barnes, and S. Krishnâmurti.

Certificates were read for the first time in favour of:

Niels Janniksen Bjerrum, Vendersgade 28, Copenhagen.
James Herbert Clegg, West Cliffe, Queens Park Road, Burnley.
Horace Cecil Cockroft, B.Sc., A.I.C., 6, Highfield Terrace, Halifax.
Francis Xavier Coyne, 160, Addison Street, Blackburn.
Robin George Westbury Farnell, A.R.C.S., A.I.C., Exeter College, Oxford.
Richard Randolph Garran, B.Sc., Orphir, St. George's Road, Toorak, Melbourne.
James Francis Halpin, F.I.C., 39, Benson Road, Forest Hill, S.E. 23.
John Stanley Heaton, Ph.D., B.Sc., 43, Birch Road, Crumpsall, Manchester.
John Cyril Hensman, M.A., A.I.C., Aldenham School, Elstree.
Horace William Hughes, B.Sc., 27, Ombersley Road, Balsall Heath, Birmingham.
David Bret Jehu, M.Sc., 34, High Street, Welshpool, Montgomeryshire.
Clifford Merton Jones, B.Sc., Buxton Crescent, Newton Hill, Wakefield.
David McDowall, 2, Kennishead Road, Thornliebank, Glasgow.
Richard Alan Morton, B.Sc., Ph.D., A.I.C., 2, Lumley Street, Garston, Liverpool.
Frederick Wilson Moulds, Hill Crest, Villa Road, Nottingham.
David Pomerantz, 15, Nottingham Place, Commercial Road, E. 1.
Robert Joseph Salmon, M.Sc., Holly Bank, Rowton, Chester.
Talrain Singh Prem Chandra Sharma, M.Sc., Engineering College Hostel, Hindu University, Benares, India.
John Robert Shepherd, M.Sc., A.I.C., Lady Hall Farm, Broughton-in Furness.
Leslie John Walker, 45, Devereux Road, Wandsworth Common, S.W. 18.
William Alexander Waters, B.A., 35, Shirley Road, Cardiff.
James Bernard Watson, 30, Mulgrave Road, West Hartlepool.

The following papers were read :

" The chemistry of petroleum. Part I. The occurrence of compounds of sulphur in the light distillate from the crude oil of Maidan-i-Naftun." By S. F. Birch and W. S. G. P. Norris.

" The chemistry of the three-carbon system. Part IV. A case of retarded mobility." By G. A. R. Kon and R. P. Linstead.

" Alternation in the molecular volumes of the normal monobasic fatty acids." By W. E. Garner and E. A. Ryder.

Ordinary Scientific Meeting, Thursday, February 19th, 1925, at 8 p.m., Professor W. P. Wynne, D.Sc., F.R.S., President, in the Chair.

The President referred to the loss sustained by the Society through the death of Dr. Horace T. Brown on February 6th, and announced that the Council had passed the following resolution :

" On behalf of the Chemical Society the Council desires to express its sense of the great loss the Society has sustained in the death of Dr. Horace T. Brown, who served on the Council as Vice-President, Ordinary Member of Council, Treasurer, and Foreign Secretary during a period of twenty years, and offers to his son and daughters deep sympathy in their bereavement."

Certificates were read for the first time in favour of :

Janardhana Ram Bhatt, B.A., Sre Sumangala College, Panadura, Ceylon.
Archibald Beresford Blunsden, The Bungalow, Westbury-on-Trym, Bristol.
Thomas Henry Bowles, Allandale, Meadowside Road, Cheam.
William Harrison Brindley, M.C., M.A., M.Sc.Tech., A.I.C., 11, Millmoor Terrace, Glossop.
Thomas James Elijah Gardner, 12, Bushwood Road, Kew.
Helen Simpson Gilchrist, 82, North Street, St. Andrews.
Frederick Denison Maurice Hocking, M.Sc., A.I.C., 18, Woodside Park Road, N. Finchley, N. 12.
Joseph Taylor Jackson, B.Sc., 192, Algernon Road, Lewisham, S.E. 13.
Ernest Edward Mabbott, B.Sc., 358, Fore Street, Edmonton, N. 9.
Edgar Kent Palmer, B.Sc.Tech., Rose Bank, Victoria Road, Hale, Cheshire.
John Brent Reed, B.Sc., A.I.C., 49, St. Mildred's Road, S.E. 12.
George James Robertson, M.A., B.Sc., Ph.D., The Manse, Stratkinness, St. Andrews.
Leonard William Ernest Townsend, 35, Harewood Road, Collier's Wood, Merton, S.W. 19.
Edwin John Woodcock, Stonecot, Claremont Hill, Jersey.

The following Certificates have been authorised by the Council for presentation to ballot under Bye-Law I (2) :

James Munsie Bell, Department of Chemistry, University of North Carolina, Chapel Hill, N.C., U.S.A.
John Cameron, Peking Union Medical College, Peking, Chihli, N. China.
Gordon McIntyre, B.Sc., Sarnia, Ontario, Canada.

Dr. B. Flürscheim and Dr. S. Sugden were elected Scrutators, and a ballot for the election of Fellows was held. The following were subsequently declared elected as Fellows :

Julius Nicholson Ashley, B.Sc., A.I.C.
George Alfred Bartram, B.Sc., A.I.C.
George Harry Beeby, B.Sc., A.I.C.
Arthur Henry Burdick Bishop.
Vincent Bloomer, B.Sc.
Claude McClellan Bottomley, B.Sc.
Frederick Stanley Brown, B.Sc., A.I.C.
Percy Chorley, M.Sc.
Herbert Isaac Coombs, B.A., B.Sc.
Alexander Steven Corbet, Ph.D., B.Sc., A.I.C.
William Haughton Crowe.
Alfred Davidson, B.Sc.
Ernest James Davis.
Walter Mark Duffin, B.Sc., A.R.C.S.
Arthur Hynard Durrant.
Frederick John Eaton, Ph.D., B.Sc., A.I.C.
George Alfred Edwards, B.A., B.Sc.
Harry Julius Emeléus, B.Sc., A.R.C.S.
Ralph Margrave Esdaile.
Edward Hugh St. Clair Flack, M.Sc.
Henry Bell Footner, B.Sc.
Desmond Geoghegan.
Clifton William Gibby, B.Sc., A.I.C.
Reginald Oswald Gibson, B.Sc., A.I.C.
Conrad Theodore Gimingham, F.I.C.
Jonathan Goodspeed.
Richard Greenhalgh, B.Sc.
Robert Owen Griffith, M.Sc., A.I.C.
Anthony James Hailwood, B.Sc.
Edward Stanley Hiscocks, B.Sc.
Herbert Henry Hodgson, M.A., Ph.D., B.Sc., F.I.C.
David Hughes.
Kathleen Harriet Hughes.
Arthur Frederick Hunt, B.Sc.
Bertram Hobart Ingham, B.Sc.
John Dobney Johnson, B.Sc.
Wilford Jordayne Johnson.
Cecil Brellisford Oakes Jones.
William Wenallt Jones, M.Sc.
Alan Richmond Kennedy.
Frank Kenyon, A.I.C.
Frederick Ernest King.
Eric Knott.
Jacob Kracovski, B.Sc.
Herbert Lambourne, M.A., M.Sc., F.I.C.
John Joseph Laws.
Raymond James Wood Le Fevre.
Alexander John Simpson Leiper, A.R.C.S.
Alfred James Andrew Lennane, M.R.C.S., L.R.C.P.
Frederick William Liley.
James Gilbert Lunt, B.Sc.
William Hamilton McVicker, M.Sc.
Thomas Mann.
Vincent Mark Mascarenhas, B.A.
Frank Douglas Miles.
Sadashiv Parashuram Nair, Ph.G.
Edward Arthur Nightingale.
Frederick William Offord.
Lionel Edward Outridge, B.Sc.
Thomas Webster Parker, A.R.C.S.
William Bayley Parker, F.I.C.
Stuart Russell Parsons, B.Sc., A.I.C.
William Samuel Payne.
Kenneth John Pierson.
Richard Edwin Pike, B.Sc.
Douglas Victor Plumbridge, Ph.D., A.R.C.S., A.I.C.
John Massey Preston, B.Sc., A.I.C.
Richard Raper, B.A.
John Frederick James Rule, B.Sc.
Moung Ba San, B.A.
Leslie Vivian Donald Scorah, B.Sc., A.I.C.
George Frederick Sheppard.
Joseph Thomas Shevlin.
Arthur Frederick Smethurst.
Ethel Minnie Snewing, B.Sc.
Alton Ewart Clarence Smith.
Susanne Mabel Lavinia Snelus, A.I.C.
Claude Hyman Spiers, M.A., Ph.D., B.Sc.
Harold Jacob Stern, Ph.D., B.Sc.
Charles James Still, Ph.D., M.Sc.
Mohammad Hassan Syed, B.Sc.
Mary Beatrice Thomas.
Eric Spencer Timms, B.Sc.
Eric Titterington.
Thomas Martin Aitken Tudhope, Ph.D., B.Sc.

Charles Cyril Norrey Vass, B.Sc.
John Harry Village, B.Sc.
Israel Vogel, B.Sc.
John Wilson, M.Sc.
Nellie Walker, M.A., Ph.D., B.Sc.
William Joseph Victor Ward, B.A.
James Ewart Whipp.
Alan Douglas Whitehead, B.Sc.
Leslie Thomas Douglas Williams, A.R.C.S.
John Henry Wylde.
Victor Emmanuel Yarsley, B.Sc., A.I.C.

The following paper was read :

"The nature of the alternating effect in carbon chains. Part II. The directing influence of the α-methoxyvinyl group in aromatic substitution." By C. K. INGOLD and E. H. INGOLD.

Dr. T. SLATER PRICE discussed "The action of light on the photographic plate."

ANNUAL GENERAL MEETING.

The Annual General Meeting will take place on Thursday, March 26th, 1925, at 4 p.m., when the PRESIDENT, Professor W. P. WYNNE, D.Sc., F.R.S., will deliver his Address.

ANNIVERSARY DINNER.

The Anniversary Dinner will be held in the Grand Hall of the Hotel Victoria, Northumberland Avenue, W.C. 2., on Thursday, March 26th, 1925 (the day of the Annual General Meeting), at 7 for 7.30 p.m. The presence of ladies will be welcomed.

Tickets, price 12*s.* 6*d.* each (including gratuities to waiters) can be obtained from the Assistant Secretary. It will facilitate arrangements if Fellows will apply for tickets at an early date, in any event before March 19th.

List of Papers, or Abstracts thereof, received between January 16th and February 19th, 1925. (This list does not include the titles of papers which have been read at a Scientific Meeting, or which have appeared in the Journal.)

"Colour and molecular geometry. Part III. A graphical presentation of the theory." By J. MOIR.

"Tesla-luminescence spectra. Part V. Some polynuclear hydrocarbons." By W. H. MCVICKER, J. K. MARSH, and A. W. STEWART.

"The surface tensions of aqueous solutions of various organic compounds." By P. R. EDWARDS.

"The cryoscopic method for adsorption." By H. L. RICHARDSON and P. W. ROBERTSON.

"Ring-chain tautomerism. Part XII. Derivatives of α-ethyl-ββ-dimethylglutaric acid." By G. A. R. KON, L. F. SMITH, and J. F. THORPE.

"A determination of the melting and transition points of potassium dichromate." By P. L. ROBINSON, G. E. STEPHENSON, and H. V. A. BRISCOE.

"Interaction of hydrogen and carbon dioxide on the surface of platinum." By C. R. PRITCHARD and C. N. HINSHELWOOD.

"The identity of uncineol with eudesmol." By A. R. PENFOLD.

"Further *X*-ray measurements on long-chain compounds (*n*-hydrocarbons)." By A. MÜLLER and W. B. SAVILLE.

"An *X*-ray investigation of the ketone series." By W. B. SAVILLE and G. SHEARER.

"The relationship of thyroxin to tryptophane." By C. S. HICKS.

"A new method of flame analysis." By O. C. DE C. ELLIS and H. ROBINSON.

"The movement of flame in closed vessels." By O. C. DE C. ELLIS and R. V. WHEELER.

"*cyclo*Telluropentanediones containing aliphatic and aromatic substituents." By G. T. MORGAN and C. J. A. TAYLOR.

"3-Chlorobenzopyrylium derivatives." By L. R. RIDGWAY and R. ROBINSON.

"A qualitative test for weak bases." By R. ROBINSON.

"The labile nature of the halogen atom in organic compounds. Part X. The action of hydrazine hydrate on the halogen derivatives of α-nitro-fatty acids." By A. K. MACBETH and D. TRAILL.

"The effect of colloids on the replacement of lead and copper from their salts by zinc." By L. T. M. GRAY.

"A new portable apparatus for the analysis of illuminating and other gases." By H. D. MURRAY.

"The action of halogen on phenylhydrazones. Part II. The action of chlorine." By J. E. HUMPHRIES, H. HUMBLE, and R. EVANS.

"Anomalous adsorption." By J. B. SPEAKMAN and A. E. BATTYE.

"The photo-decomposition of chlorine water and of aqueous hypochlorous acid solutions. Part I." By A. J. ALLMAND, P. W. CUNLIFFE, and R. E. W. MADDISON.

"Studies of dynamic isomerism. Part XVII. The mutarotation of aluminium benzoyl-camphor." By I. J. FAULKNER and T. M. LOWRY.

"Studies of dynamic isomerism. Part XVIII. The mechanism of mutarotation and of hydrolytic and prototropic change; with a criticism of Baker, Ingold, and Thorpe's doctrine of non-intervention." By T. M. LOWRY.

"Studies of dynamic isomerism. Part XIX. Experiments on the arrest of mutarotation in tetramethylglucose." By T. M. LOWRY and E. M. RICHARDS.

"The freezing points of hydrofluoric acid." By J. D. C. ANTHONY and L. J. HUDLESTON.

"The hydrolysis of iodine as measured by the iodine electrode." By H. D. MURRAY.

"Some aromatic chlorovinylarsines." By A. F. HUNT and E. E. TURNER.

"The mechanism of the reaction between arylhydrazine sulphonic acids and acetoacetic ester." By G. REEVES.

"The compounds formed by the action of bromine upon benzaldehyde-phenylhydrazone." By F. D. CHATTAWAY and A. J. WALKER.

"Periodic electrochemical phenomena." By E. S. HEDGES and J. E. MYERS.

"The nitration of meta-hydroxybenzaldehyde carbonate and ethyl carbonate." By F. A. MASON.

"A synthesis of 1 : 2-dihydroquinaldine." By F. A. MASON.

"The synthesis of 5 : 5′-dibromo-6 : 6′-dimethoxy thioindigo." By R. H. GRIFFITH and E. HOPE.

"The interaction of sodium chloride and alumina." By F. H. CLEWS.

"A resolution of benzoin." By F. J. WILSON and I. V. HOPPER.

"Semicarbazones of benzoin. Part I." By I. V. HOPPER.

"The 'activation' of graphite as a sorbent of oxygen." By D. H. BANGHAM and J. STAFFORD.

"The mechanism of the formation of malachite from basic cupric carbonate." By J. R. I. HEPBURN.

"A synthesis of oxyberberine. Part I." By W. H. PERKIN, J. N. RÂY, and R. ROBINSON.

"Variation of colour in the fluoresceine family." By J. MOIR.

"The equilibria underlying the soap boiling processes. Pure sodium palmitate." By J. W. MCBAIN and G. M. LANGDON.

"Some reactions of triethylphosphine." By J. N. COLLIE.

"Nitro- and amino-ethoxy-lutidine." By J. N. COLLIE and G. BISHOP.

ADDITIONS TO THE LIBRARY.

I. *Donations.*

ADAMKIEWICZ, ALBERT. Die Natur und der Nährwerth des Peptons: eine experimentelle Untersuchung zur Physiologie des Albumins. Berlin 1877. pp. viii + 128. From Dr. H. E. Cox.

ALLEN, ROBERT. Bismuth ores. (Imperial Institute Monograph on Mineral Resources.) London 1925. pp. x + 62. ill. 3*s*. 6*d*. net. (*Recd*. 5/3/25.) From the Director.

ATACK, FREDERICK WILLIAM, assisted by LEONARD WHINYATES. The Chemists' Year Book 1924. American data in collaboration with FRANCIS M. TURNER, Jr. Manchester [1924]. pp. xii + 1164. ill. (*Reference*.) From Mr. L. Eynon.

BÖTTGER, WILHELM. Qualitative Analyse und ihre wissenschaftliche Begründung. 4th—7th edition. Leipzig 1925. pp. xvi + 644 + 34. *M*. 22. (*Recd*. 3/2/25.)
From the Publisher: Herr Wilhelm Engelmann.

CARPENTER, LEONARD. Mechanical mixing machinery. London 1925. pp. 138. ill. 6*s*. net. (*Recd*. 11/2/25.)
From the Publishers: Messrs. Ernest Benn.

CONGRÈS INTERNATIONAL POUR LA RÉPRESSION DES FRAUDES. Compte rendu des travaux du deuxième Congrès, 1909. Paris 1910. pp. viii + 1496. From Dr. H. E. Cox.

DEADLY ADULTERATION and slow poisoning unmasked; or, disease and death in the pot and the bottle. By an enemy to fraud and villany. New edition. London [n. d.]. pp. viii + 190. From Dr. H. E. Cox.

ELLIOTT, CYRIL. Distillation principles. London 1925. pp. 166. ill. 6*s*. net. (*Recd*. 11/2/25.)
From the Publishers: Messrs. Ernest Benn.

GIBBS, WILLIAM E. The dust hazard in industry. London 1925. pp. 168. ill. 6*s*. net. (*Recd*. 11/2/25.)
From the Publishers: Messrs. Ernest Benn.

GORE, GEORGE, SPARLING, MARCUS, and SCOFFERN, JOHN. Practical chemistry: including the theory and practice of electrodeposition; photographic art; the chemistry of food, with a chapter on its adulterations; and the chemistry of artificial illumination. London 1856. pp. xvi + 574. ill. From Dr. H. E. Cox.

GUYE, CHARLES EUGÈNE. Physico-chemical evolution. Translated by J. R. CLARKE. London 1925. pp. xii + 172. 6*s*. net. (*Recd*. 12/2/25.) From the Publishers: Messrs. Methuen & Co.

HALSE, EDWARD. Antimony ores. (Imperial Institute Monograph on Mineral Resources.) London 1925. pp. x + 102. ill. 5*s*. net. (*Recd*. 5/3/25.) From the Director.

HENNINGER, ARTHUR [RODOLPHE MARIE]. De la nature et du role physiologique des peptones. Paris 1878. pp. 68.
From Dr. H. E. Cox.

HOFMANN, FRANZ. Die Bedeutung von Fleischnahrung und Fleischconserven mit Bezug auf Preisverhältnisse. Leipzig 1880. pp. iv + 120. From Dr. H. E. Cox.

JANKE, ALEXANDER. Allgemeine technische Mikrobiologie. I Teil: Die Mikroorganismen. Dresden 1924. pp. xii + 342. ill. *M.* 12. (*Recd.* 3/2/25.) From the Publisher: Herr Theodor Steinkopff.

LOWY, ALEXANDER, and HARROW, BENJAMIN. An introduction to organic chemistry. New York 1924. pp. x + 390. ill. 15*s.* net. (*Recd.* 12/2/25.)
From the London Publishers: Messrs. Chapman & Hall.

PATTERSON, AUSTIN M. A German-English dictionary for chemists. 5th printing, with addenda. New York 1924. pp. xvi + 344. (*Reference.*) 12*s.* 6*d.* net.
From the London Publishers: Messrs. Chapman & Hall.

REVUE GÉNÉRALE DES COLLOÏDES et de leurs applications industrielles. Year I, etc. Paris 1923 +. (*For circulation.*)
From the Biochemical Society.

SEYMOUR, HARTLAND. Agitating, stirring and kneading machinery. London 1925. pp. 140. ill. 6*s.* net. (*Recd.* 11/2/25.) From the Publishers: Messrs. Ernest Benn.

SPIELMANN, PERCY EDWIN. Bituminous substances: scientific progress of practical importance during the last fifteen years. London 1925. pp. xvi + 206. ill. 15*s.* net. (*Recd.* 21/1/25.)
From the Publishers: Messrs. Ernest Benn.

TUNGAY, SYDNEY J. Acid-resisting metals. London 1925. pp. 136. ill. 6*s.* net. (*Recd.* 11/2/25.)
From the Publishers: Messrs. Ernest Benn.

URBAIN, GEORGES. Les notions fondamentales d'élément chimique et d'atome. Paris 1925. pp. iv + 172. 10 *fr.* (*Recd.* 10/2/24.) From the Publishers: MM. Gauthier-Villars et Cie.

WELLINGS, A. W. Chemical symbols, formulæ and calculations. London 1925. pp. viii + 96. 3*s.* net. (*Recd.* 16/1/25.)
From the Publishers: Messrs. Methuen & Co.

II. *By Purchase.*

ARENDT, RUDOLF. Technik der Experimentalchemie: Anleitung zur Ausführung chemischer Experimente. 5th edition. Edited by LUDWIG DOERMER and WALTER FRANCK. Leipzig 1925. pp. xxviii + 732. ill. *M.* 26.50. (*Recd.* 2/2/25.)

FREUNDLICH, HERBERT. The elements of colloidal chemistry. Translated by GEORGE BARGER. London 1925. pp. viii + 210. ill. 7*s.* 6*d.* net. (*Recd.* 19/1/25.)

TECHNOLOGY DEPT.

PUBLIC LIBRARY
MAR 26 1925
DETROIT

PROCEEDINGS

OF THE

CHEMICAL SOCIETY.

Lecture, held in the Lecture Hall of the Institution of Mechanical Engineers, Storey's Gate, Westminster, S.W. 1, on Thursday, February 26th, 1925, at 8 p.m., Professor W. P. WYNNE, D.Sc., F.R.S., President, in the Chair.

Sir WILLIAM HARDY, M.A., Sec.R.S., delivered his Lecture entitled: "Problems presented by Films on Solid Surfaces." A vote of thanks to the Lecturer, proposed by Professor H. E. Armstrong, F.R.S., seconded by Professor A. V. Hill, F.R.S., and supported by the Chairman, was carried with acclamation, and acknowledged by Sir William Hardy.

Ordinary Scientific Meeting, Thursday, March 5th, 1925, at 8 p.m., Professor W. P. WYNNE, D.Sc., F.R.S., President, in the Chair.

The PRESIDENT referred to the loss sustained by the Society, through death, of the following Fellows:

	Elected.	Died.
Sir Edward Thorpe	Feb. 16th, 1871.	Feb. 23rd.
Alexander Mitchell Williams	Dec. 7th, 1922.	Feb. 21st.

The PRESIDENT also announced that at a Special Meeting of the Council, held on February 26th, 1925, the following resolution was passed:

"On behalf of the Chemical Society, the Council desires to express its profound regret at the death of Sir Edward Thorpe, who for 54 years was a Fellow, and during 39 years served the Society as Member of Council, Vice-President, Treasurer and President, and while Treasurer initiated and supervised the production of the first three volumes of the Collective Indexes of the Society's Journal.

"The Council recognises that by Sir Edward Thorpe's death the

Society loses a wise counsellor and British Chemistry a distinguished investigator, and offers to Lady Thorpe its sincere sympathy in her bereavement."

The Fellows present expressed their concurrence in this resolution by rising from their places.

It was also announced that

(1) With a view to increasing the usefulness of the Library, the Council has made arrangements for the photographic copying by means of the Photostat, of material contained in the Library. Particulars as to cost, etc., can be obtained from the Librarian.

(2) The first lecture in connection with the Fison Memorial Fund, which was established to endow a Lectureship in memory of the late Dr. A. H. Fison, will be delivered by Professor J. J. Thomson, O.M., F.R.S., on Thursday, May 7th, 1925, at 5 p.m., the Right Hon. the Earl of Balfour presiding. The place of meeting will be announced later. Tickets of admission will be obtainable from Mr. S. E. Carr.

The following List of Nominations for vacant places on the Council was read from the Chair :

President : Arthur W. Crossley.

Vice-Presidents who have filled the office of President (3 vacancies) : H. E. Armstrong, A. Scott, W. P. Wynne.

Vice-Presidents who have not filled the office of President (2 vacancies) : J. B. Cohen, N. V. Sidgwick.

Secretary : T. Slater Price.

Foreign Secretary : F. G. Donnan.

Ordinary Members of Council :

(*a*) Town Members, *i.e.*, those resident within 50 miles of Charing Cross (5 vacancies) : H. Bassett, F. W. Gamble, J. Kenyon, B. D. Porritt, G. Stubbs.

(*b*) Country Members, *i.e.*, those resident beyond 50 miles from Charing Cross (2 vacancies) : F. A. Freeth, W. Rintoul, F. J. Wilson.

Dr. P. W. Austin and Dr. E. E. Turner were appointed Scrutators to assist in the counting of votes recorded in the election of the Country Members of Council.

The following were formally admitted Fellows of the Chemical Society : F. H. Banfield, F. Kenyon, A. H. Durrant, A. F. Smethurst, J. D. Johnson, R. E. Pike, C. H. Spiers, S. Dutt, J. Kracovski, H. J. Emeléus, I. Vogel, K. V. Thimann, S. S. G. Sircar, B. T. Narayanan.

The Treasurer drew attention to the fact that on Thursday, March 5th, 1885, exactly 40 years ago, a certificate of a candidate for election as a Fellow was read for the first time in favour of William Palmer Wynne. Commenting on the uniqueness of the occasion, the Treasurer expressed the hope that the President would long be spared to give the Society the benefit of his wise counsel. The meeting showed its hearty approval of the Treasurer's remarks, and the President expressed his sincere thanks for the kind reference.

Certificates were read for the first time in favour of :

Geoffrey Alger Blyde, East Cliffe, East Bank Road, Sheffield.
Frank Henry Charles Bull, B.Sc., A.I.C., 50, Cornwall Road, Bishopston, Bristol.
Harry Dean, 134, New Lane, Oswaldtwistle.
Irvine John Faulkner, Emmanuel College, Cambridge.
Thomas Flett, B.Sc., A.I.C., Anchor Cottage, Kirkwall, Orkney.
John Charles Giblin, B.Sc., A.I.C., 3, Kensington Terrace, Brecon.
Isabel Hodgson Hadfield, M.Sc., 65, Langham Road, Teddington.
Thomas Haworth, 8, Park Terrace, Fielding Lane, Oswaldtwistle.
William Jobson, 52, The Mall, Swindon.
Thomas William Jones, B.Sc., 36, St. Vincent Road, Westcliff-on-Sea.
John Keane, M.Sc., Ph.D., 6 Shamrock Villas, Drumcondra, Dublin.
Andrew Joseph Myles, 12, Gardner Road, Tue Brook, Liverpool.
Alfred William Nash, B.Sc., 18, Prospect Road, Moseley, Birmingham.
Henry Bowen Oakley, M.Sc., A.R.C.S., Wellcome Tropical Research Laboratories, Khartoum.
Harry Rawlings, B.Sc., 15, Station Road, Ramsey, Huntingdon.
Alan Lawrence Smith, M.Sc., 22, Dean Street, Blackpool.
George Thorn, B.Sc., Grove House, Beechen Grove, Watford.
Ernest Swann Watts, Eaglesfield, Limefield Road, Kersal, Manchester.
Archibald Steele Whamond, 22, Church Street, Alloa.
John Stanley Worthington, 27, Rowena Street, Great Lever, Bolton.

The following papers were read :

"Studies of dynamic isomerism. Part XVII. The mutarotation of aluminium benzoylcamphor." By I. J. FAULKNER and T. M. LOWRY.

"Studies of dynamic isomerism. Part XVIII. The mechanism of mutarotation, and of hydrolytic and prototropic change; with a criticism of Baker, Ingold, and Thorpe's doctrine of non-intervention." By T. M. LOWRY.

"Studies of dynamic isomerism. Part XIX. Experiments on the arrest of mutarotation in tetramethylglucose." By T. M. LOWRY and E. M. RICHARDS.

Ordinary Scientific Meeting, Thursday, March 19th, 1925, at 8 p.m., Professor W. P. WYNNE, D.Sc., F.R.S., President, in the Chair.

The PRESIDENT referred to the loss sustained by the Society, through the death of Joseph Arderne Ormerod, who was elected a Fellow on May 16th, 1872, and died on March 5th.

R. H. Purcell was formally admitted a Fellow of the Chemical Society.

Certificates were read for the first time in favour of:

James Lindsay Buchan, B.Sc., Hampden Club, N.W. 1.
John Alfred Valentine Butler, M.Sc., The Potteries, Winchcombe, Glos.
Annie Lavinia Byford, B.Sc., 73, Elderton Road, Westcliff-on-Sea.
James Craik, M.A., B.Sc., Ph.D., The University, St. Andrews.
Herbert Greetham Dane, M.Sc., The Diocesan Training College, Winchester.
Margaret Stedman Leonora Dixon, Homebush, Worcester Road, Sutton.
Donald Hanson, 7, Willow Bank, Halifax.
Joseph Hill, 58, Spring Street, Accrington.
Jim Hoyle, 11, Crow Lane, Ramsbottom.
Richard H. F. Manske, M.Sc., The University, Manchester.
Hugh Clonston Moir, B.Sc., A.I.C., 7, Craigielea Street, Dennistoun, Glasgow.
William George Rhodes, 318, Granville Road, Park, Sheffield.
Thomas Kennedy Walker, M.Sc., Ph.D., F.I.C., 4, Swythamley Road, Cheadle Heath, Stockport.

The following Certificates have been authorised by the Council for presentation to ballot under Bye-Law I (2) in favour of:

Karl Thomas, M.D., The University, Leipzig.
Frederic N. Williams, P.O. Box 1117, Shreveport, La., U.S.A.

The following papers were read:

"The 'activation' of graphite as a sorbent of oxygen." By D. H. BANGHAM and J. STAFFORD.

"Ring-chain tautomerism. Part XIV. The structure of Balbiano's acid." By E. ROTHSTEIN, A. STEVENSON, and J. F. THORPE.

"The tendency towards intramolecular condensation in cyclic keto-esters. Part I. The formation and disruption of bicyclic dihydroresorcinols." By E. H. FARMER and J. ROSS.

"The structure of the enolic forms of β-ketoesters and β-diketones." By N. V. SIDGWICK.

PUBLICATIONS FUND.

In connection with the Appeal for the Publications Fund issued by the Treasurer, it has been decided that a list of donations and subscriptions received shall appear in the Proceedings for June. All donations and subscriptions received prior to the end of May will be included in the List.

LIST OF FELLOWS, 1925.

It has been decided to print the List of Fellows for 1925 and to supply the List to those Fellows who make application to the Assistant Secretary by the 31st July, 1925.

List of Papers, or abstracts thereof, received between February 19th and March 19th, 1925. (This List does not include the titles of papers which have been read at a Scientific Meeting, or which have appeared in the Journal.)

"The isomerism of the oximes. Part XXI. Action of picryl chloride and of 2 : 4-dinitrochlorobenzene on aldoximes." By O. L. BRADY and L. KLEIN.

"Derivatives of semioxamazide. Part III." By F. J. WILSON and E. C. PICKERING.

"The stereochemistry of the hydronaphthalenes and related sesquiterpenes. Part I. Decahydro-β-naphthoic acid." By F. W. KAY and N. STUART.

"Irregularities in the condensation of certain nitriles with resorcinol." By E. CHAPMAN and H. STEPHEN.

"Studies in the benzothiazole series. Part III. The pseudobases of the *l*-substituted benzothiazole quaternary salts." By L. M. CLARK.

"Sulphur compounds removed from a Persian petroleum by means of sulphuric acid. Part I." By E. H. THIERRY.

"Ring-chain tautomerism. Part XIII. Three carbon ring-chain tautomerism in a bridged ring system." By J. W. BAKER.

"The measurement of the dielectric constants of liquids." By H. HARRIS.

"Note on the physiological action of certain benzothiazoles and mercaptan derivatives." By R. F. HUNTER.

"Note on the physiological action of certain arylamino-derivatives of monochloroacetic acid." By R. F. HUNTER.

"The hydrolytic properties of certain amino-acids." By L. P. BOSMAN.

"The reduction of anethole nitrosochloride." By J. B. SHOESMITH and R. H. SLATER.

"Investigations on the dependence of rotatory power on chemical constitution. Part XXV. Three optically active alcohols containing a phenyl group and some esters derived therefrom." By L. F. HEWITT and J. KENYON.

"The integral relations between the vibration frequencies of molecules." By E. C. C. BALY, R. A. MORTON, and E. ROGERS.

"The photochemical decomposition of nitrosyl chloride." By E. J. Bowen and J. F. Sharp.

"Ray's supposed triethylene trisulphide." By G. M. Bennett and W. A. Berry.

"Hepta- and nono-dilactones." By G. M. Bennett.

"A synthesis of pyrylium salts of anthocyanidin type. Part VI. Polyhydroxyflavylium salts related to chrysin, apigenin, lotoflavin, luteolin, galangin, fisetin, and morin." By D. D. Pratt and R. Robinson.

"Reactions depending upon the vapour at the interface of two immiscible liquids. Part II." By G. Harker and R. K. Newman.

"The hydrates of calcium carbonate." By J. Hume.

"The labile nature of the halogen atom in organic compounds. Part XI. The halogenation of acetylsuccinic ester." By A. K. Macbeth and D. Traill.

"A solid hydride of antimony." By E. J. Weeks and J. G. F. Druce.

"A study of the effect of the concentration of aqueous sodium hydroxide solutions upon the rate of saponification of olive oil." By G. I. Finch and A. Karim.

"The formation of *d*-2 : 2 : 4-trimethyl*cyclo*hexan-3-one-1-carboxylic acid from *d*-camphorquinone." By C. S. Gibson and J. L. Simonsen.

"The reaction between aromatic aldehydes and phenanthraquinone in presence of ammonia." By A. C. Sircar and N. C. G. Ray.

"Studies in heterocyclic compounds. Part I." By A. C. Sircar and P. K. De.

"The action of azides on toluquinone." By F. D. Chattaway and G. D. Parkes.

"The partial pressures of water vapour and of sulphuric acid vapour over concentrated solutions of sulphuric acid at high temperatures." By J. S. Thomas and W. F. Barker.

"Investigations on the dependence of rotatory power on chemical constitution. Part XXVI. Four alcohols containing the vinyl group and some esters derived therefrom." By J. Kenyon and D. R. Snellgrove.

"A synthesis of pyrylium salts of anthocyanidin type. Part VII. The preparation of the anthocyanidins with the aid of triacetylphloroglucinaldehyde." By D. D. Pratt and R. Robinson.

"A synthesis of pyrylium salts of anthocyanidin type. Part VIII. A new synthesis of pelargonidin chloride and of galanginidin chloride." By T. Malkin and R. Robinson.

" The action of halogens upon *m*- and *p*-nitrobenzaldehyde phenylhydrazones." By F. D. CHATTAWAY and A. J. WALKER.

" Plant cuticles. Part I. Modern plant cuticles. Studies in the composition of coal." By V. H. LEGG and R. V. WHEELER.

" The explosion of ammonia with carbon monoxide and oxygen." By J. W. BEESON and J. R. PARTINGTON.

" 3 : 3-Diethylpentane (tetraethylmethane)." By G. T. MORGAN, S. R. CARTER, and A. E. DUCK.

" Aromatic esters of acylecgonines." By W. H. GRAY.

" The additive formation of four-membered rings. Part VII. The synthesis and division of some dimethylene-1 : 3-oxaimines." By C. K. INGOLD.

" The decomposition of hydrogen peroxide by cobaltic hydroxide." By F. G. TRYHORN and G. JESSOP.

ADDITIONS TO THE LIBRARY.

I. *Donations.*

ACTUALITÉS DE CHIMIE CONTEMPORAINE. Publiées sous la direction de ALBIN HALLER. 3rd series. Paris 1925. pp. viii + 328. 12 *fr.* net. (*Recd.* 24/2/25.)

From the Publisher : M. Gaston Doin.

HANDBUCH DER SALVARSANTHERAPIE. Edited by W. KOLLE and K. ZIELER. Vol. II. Berlin 1925. pp. xiv + 878. ill. *M.* 34.40. (*Recd.* 16/3/25.) From the Publishers : Messrs. Urban & Schwarzenberg.

II. *By Purchase.*

GMELINS HANDBUCH DER ANORGANISCHEN CHEMIE. 8th edition. By RICHARD JOSEF MEYER [and others]. Berlin 1924 +. (*Reference.*)

GNAMM, H. Die Gerbstoffe und Gerbmittel. (Chemie in Einzeldarstellungen, Vol. XII.) Stuttgart 1925. pp. xvi + 394. *M.* 24. (*Recd.* 14/3/25.)

HANSLIAN, RUDOLF, and BERGENDORFF, FR. Der chemische Krieg : Gasangriff, Gasabwehr und Raucherzeugung. Berlin 1925. pp. iv + 226. ill. *M.* 11. (*Recd.* 10/2/25.)

HOLDE, DAVID. Kohlenwasserstofföle und Fette sowie der ihnen chemisch und technisch nahestehenden Stoffe. 6th edition. Berlin 1924. pp. xxviii + 856. ill. *M.* 45. (*Recd.* 2/2/25.)

HOPPE-SEYLER, ERNST FELIX IMMANUEL. Handbuch der physiologisch- und pathologisch-chemischen Analyse. 9th edition. By HANS THIERFELDER. Berlin 1924. pp. xvi + 1004. ill. *M.* 69. (*Recd.* 2/2/25.)

KLÖCKER, ALB. Die Gärungsorganismen in der Theorie und Praxis der Alkoholgärungsgewerbe. 3rd edition. Berlin 1924. pp. xviii + 448. ill. *Rm.* 12. (*Recd.* 24/2/25.)

LEBERLE, HANS. Die Bierbrauerei. 2 vols. Stuttgart 1921–25. pp. xii + 307, xii + 589. ill. *M.* 31.80. (*Recd.* 9/3/25.)

LORD, NATHANIEL WRIGHT, and DEMOREST, DANA J. Metallurgical analysis. 5th edition. New York 1924. pp. xxii + 472. ill. 20*s.* net. (*Recd.* 19/1/25.)

MILLIKAN, ROBERT ANDREWS. The electron: its isolation and measurement and the determination of some of its properties. 2nd edition. Chicago 1924. pp. xiv + 293. ill. 8*s.* 9*d.* net. (*Recd.* 19/1/25.)

MÜLLER, ERICH. Elektrochemisches Praktikum. 4th edition. Dresden 1924. pp. xvi + 264. ill. *M.* 10. (*Recd.* 28/1/25.)

NERNST, WALTHER. Die theoretischen und experimentellen Grundlagen des neuen Wärmesatzes. 2nd edition. Halle (Saale) 1924. pp. viii + 232. ill. *M.* 12. (*Recd.* 10/2/25.)

RISTENPART, EUGEN. Chemische Technologie der organischen Farbstoffe. 2nd edition. Leipzig 1925. pp. xiv + 300 + 12 pattern plates. ill. *M.* 15. (*Recd.* 2/2/25.)

SOMMERFELD, ARNOLD. Atombau und Spektrallinien. 4th edition. Braunschweig 1924. pp. xii + 862. ill. *M.* 22. (*Recd.* 28/1/25.)

STRACHE, HUGO, and LANT, RICHARD. Kohlenchemie: Entstehung und chemisches Verhalten der Kohlen und ihrer Bestandteile, Untersuchungen der Kohlen. Leipzig 1924. pp. xvi + 600. ill. *M.* 24. (*Recd.* 2/2/25.)

SUTTON, FRANCIS. A systematic handbook of volumetric analysis. 11th edition. Revised throughout, with numerous additions, by WILLIAM LINCOLNE SUTTON and ALFRED EDWARD JOHNSON. London 1924. pp. x + 630. ill. 35*s.* net. (*Recd.* 19/1/25.)

TAYLOR, HUGH STOTT. [Editor.] A treatise on physical chemistry: a co-operative effort by a group of physical chemists. 2 vols. London 1924. pp. xii + 604 + 42, x + 701 to 1360 + 42. ill. 50*s.* net. (*Recd.* 21/1/25.)

III. *Pamphlets.*

COHEN, BARNETT, GIBBS, HARRY DRAKE, and CLARK, WILLIAM MANSFIELD. Studies on oxidation-reduction. VI. A preliminary study of indophenols: (*a*) dibromo substitution products of phenol indophenol; (*b*) substituted indophenols of the ortho type; (*c*) miscellaneous. (From the *U.S. Public Health Reports*, 1924, **39**.)

ELVOVE, ELIAS. A method for the estimation of total sulfur in neoarsphenamine and sulpharsphenamine. (From the *U.S. Public Health Reports*, 1924, **39**.)

Court sub

PROCEEDINGS

OF THE

CHEMICAL SOCIETY.

ANNIVERSARY DINNER.

THE Anniversary Dinner of the Society was held in the Grand Hall, Hotel Victoria, on Thursday, March 26th, 1925, at 7 for 7.30 p.m., Dr. ARTHUR W. CROSSLEY, C.M.G., C.B.E., D.Sc., F.R.S., President, in the Chair. The following is a list of those present :

Aeschlimann, J. A.
Anderson, Rt. Hon. Sir John, G.C.B., *Permanent Under-Secretary of State for Home Affairs.*
Anderson, Miss O. R.
Armstrong, H. E., F.R.S., *Past-President.*
Armstrong, Miss N.
Austin, P. C.
Austin, Mrs. P. C.
Backer, H. J.
Baker, H. B., C.B.E., F.R.S.
Baker, Mrs. H. B.
Baly, E. C. C., C.B.E.
Bassett, H.
Bennett, Miss D. M.
Bennett, J. C. S.
Bennett, G. M.
Bolton, E. R.
Bolton, Mrs. E. R.
Bolton, L. H.
Bolton, Mrs. L. H.
Boyd, D. R.
Brady, O. L.
Brewer, F. M.
Brown, R. B.
Brown, Mrs. R. B.
Burch, W. J. N.
Burgess, W. T.
Burton, H.
Carr, F. H., C.B.E.
Carr, Mrs. F. H.
Carr, Miss M.
Carr, S. E., *Assistant Secretary.*
Chapman, A. Chaston, F.R.S.
Chapman, Mrs. Chaston.
Chapman, A. W.
Chattaway, F. D., F.R.S.
Chemical Age.
Chemistry and Industry.
Clifford, E.
Clifford, F. W., *Librarian.*
Coates, J. E., O.B.E.
Cod, L. M.
Cohen, Ernst, *Nederlandsche Chemische Vereeniging.*
Cohen, Mrs. E.
Collins, S. W.
Cooper, A. J. Bullen.
Cooper, H. Creemer.
Corfield, C. E.
Corfield, Mrs. C. E.
Crossley, A. W., C.M.G., C.B.E., F.R.S., *President.*
Crossley, Mrs. A. W.
Crossley, K. H.
Daily Telegraph.
Dale, H. H., C.B.E., F.R.S.
Desch, C. H., F.R.S.
Dickes, Miss W. E.
Donald, M. B.
Donnan, F. G., C.B.E., F.R.S., *Foreign Secretary.*
Donnan, Miss.

Drew, R. B.
Druce, J. G. F.
Drummond, J. C.
Drummond, Mrs. M. H.
Dudley, H. W., O.B.E.
Dudley, Mrs.
Duncalfe, R.
Dunn, F. P.
Dyer, B.
Dyer, Mrs. B.
Eldridge, A. A.
Eldridge, Mrs. A. A.
Ellingham, H. J. T.
Fargher, R. G.
Fox, J. J., O.B.E.
Freeth, F. A., O.B.E.
Galletly, W. G.
Gardner, J. A.
Garner, W. E.
Gibbons, W. M., O.B.E., *Registrar, Sheffield University.*
Gibson, C. S., O.B.E., *Secretary.*
Gilling, C.
Gordon, J. G.
Gray, J. Hunter, K.C.
Gray, Mrs. J. Hunter.
Gray, W. H.
Greenaway, A. J.
Greeves, A.
Greeves, Mrs. A.
Gregory, Sir Richard.
Griffiths, O. S.
Haas, P.
Hamer, Miss F. M.
Hamer, J. C.
Hamer, Sir William.
Hamer, Lady.
Heath, Sir Frank, K.C.B., *Secretary, Department of Scientific and Industrial Research.*
Henderson, G. G., F.R.S., *President, The Institute of Chemistry.*
Henry, T. A.
Henry, Mrs. T. A.
Hewitt, J. T., F.R.S.
Heycock, C. T., F.R.S.
Hinkel, L. E.
Hinks, E., M.B.E.
Hinks, Mrs. E.
Hoffert, Miss D. A.
Holleman, A. F.
Holleman, Mrs. A. F.
Horton, E.
Hunter, H.
Hutchinson, H. B.
Jackson, Sir Herbert, K.B.E., F.R.S.
Jackson, Lady.
James, T. Campbell.
Jeans, J. H., *Sec. R.S.*
Johnston, T. B., *Dean, Guy's Hospital Medical School.*
Kenyon, J.
King, H.
King, Mrs. H.
Kingston, Miss H. L.
Lakeman, Miss E.
Laker, J.
Lambert, B.
Le Pla, Miss M., *Indexer.*
Lessing, Dr. R.
Lessing, Mrs. R.
Leuchars, W. W., *Prime Warden, The Dyers' Company.*
Levy, Miss E. R.
Lowndes, J.
Lowry, T. M., C.B.E., F.R.S.
McBain, J. W., F.R.S.
McCombie, H., D.S.O., M.C.
Maclean, Mrs. I. S.
Maclean, H.
Macnab, W., C.B.E.
Manning, A. B.
Masson, I., M.B.E.
Meulen, H. ter.
Meulen, Mrs. H. ter.
Miall, S.
Miall, Mrs. S.
Micklethwait, Miss F. M. G., M.B.E.
Mitchell, A. D.
Mitchell, Mrs. A. D.
Monier-Williams, G. W., O.B.E., M.C.
Moody, Mrs. G. T.
Moore, T. S.
Moore, Mrs. T. S.
Morgan, G. T., O.B.E., F.R.S.
Morning Post.
Morrell, G. F.
Morrell, Mrs. G. F.
Morris, H. J.
Mott, B., *President, The Institution of Civil Engineers.*
Newton, A. U.
Neilsen, H.
Neilsen, Mrs. H.
Nuthall, Tallant.
Ormandy, W. R.
Ormandy, Mrs. W. R.

Orton, K. J. P., F.R.S.
Paget, H.
Paget, Mrs. H.
Palmer, W. G.
Palmer, Mrs. W. G.
Pedersen, Kai.
Perkin, W. H., F.R.S., *Past-President.*
Philip, J. C., O.B.E., F.R.S.
Philip, Mrs. J. C.
Pickles, S. S.
Plimmer, R. H. A.
Pope, Sir William J., K.B.E., F.R.S., *Past-President.*
Porritt, B. D.
Pratt, W. R.
Pratt, Mrs. W. R.
Press Association.
Price, T. Slater, O.B.E., F.R.S., *Secretary.*
Price, Mrs. T. Slater.
Pringle, Sir John, C.B.
Pyman, F. L., F.R.S.
Pyman, Mrs. F. L.
Raven, Sir Vincent, K.B.E., *President, The Institution of Mechanical Engineers.*
Reid; R. B., *President, The Institute of Brewing.*
Roberts, E.
Robertson, Mrs. E. G.
Robertson, Sir Robert, K.B.E., F.R.S.
Robertson, Lady.
Rogers, H.
Rosedale, J. L.
Rowlands, M. J.
Russell, A. S.
Sargeant, F. Pilkington, *President, The Pharmaceutical Society.*
Scott, A., F.R.S., *Past-President.*
Scott, Mrs. A.
Sharp, T. M.
Sharp, Mrs. T. M.
Sidgwick, N. V., F.R.S.
Simonsen, J. L.
Simonsen, Mrs. J. L.
Simpson, G. C., C.B.E., F.R.S.
Simpson, Mrs. G. C.
Smith, C., *Editor.*
Smith, Miss M. L.
Smith, T. B.
Spielmann, P. E.
Stern, A. L.
Stern, Mrs. A. L.
Stubbs, G., C.B.E.
Stubbs, Mrs. G.
Sugden, S.
Taylor, Miss M.
Thomas, R. N. Garrod.
Thomson, J. Millar, F.R.S.
Thorpe, J. F., C.B.E., F.R.S., *Treasurer.*
Thorpe, Mrs. J. F.
Times.
Tinkler, C. K.
Tinkler, Mrs. C. K.
Tryhorn, F. G.
Tryhorn, Mrs. F. G.
Turner, E. E.
Turner, Miss E. G.
Turner, G. W.
Turner, T., *President, The Institute of Metals.*
Voelcker, E.
Voelcker, E. W.
Voelcker, J. A.
Whiteley, Miss M. A., O.B.E.
Widdows, Miss S. T.
Woolcock, W. J. U., C.B.E., *President, The Society of Chemical Industry.*
Wynne, Miss D. P.
Wynne, W. P., F.R.S., *Past-President.*

After the loyal toasts had been honoured the President announced that he had had a telegram from Professors Biilmann, Bjerrum, Bohr, Brönsted, and Sörensen sending their hearty greetings and congratulations to the Society. This was received with acclamation.

The following is a list of the Toasts proposed :—

1. " His Most Gracious Majesty The King."

2. " Their Majesties the Queen and Queen Alexandra, His Royal Highness the Prince of Wales, and the other members of the Royal Family."

By Sir H. Frank Heath, K.C.B., Secretary of the Department of Scientific and Industrial Research :—

3. "The Chemical Society," coupled with the name of the President.

By Professor Henry E. Armstrong, LL.D., F.R.S., Past-President :—

4. "The Retiring President, Professor W. P. Wynne, D.Sc., F.R.S."

By Professor Irvine Masson, M.B.E., D.Sc. :—

5. "The Federated Societies," coupled with the name of W. J. U. Woolcock, Esq., C.B.E., President of the Society of Chemical Industry.

By Professor F. G. Donnan, C.B.E., D.Sc., F.R.S., Foreign Secretary :—

6. "The Guests," coupled with the names of Professor Ernst Cohen, of Utrecht University (representing the Nederlandsche Chemische Vereeniging), and J. Hunter Gray, Esq., K.C., M.A.

Sir H. Frank Heath, K.C.B., in proposing the toast of "The Chemical Society," said :—

Mr. President, Ladies and Gentlemen, after I had accepted with some hesitation the invitation to address you this evening, and to propose this toast, I happened to be present at a public dinner where one of His Majesty's Judges said that after considerable experience of speeches of the kind he had come to the conclusion that most proposers of toasts began by explaining how unfitted they were for the task entrusted to them, and spent the rest of the time in proving it. Well, Ladies and Gentlemen, after that opinion from the Bench, there is nothing left for me but to throw myself on the mercy of the court.

I do, indeed, feel it to be a very great honour that a great scientific society like this should ask to have the principal toast of the evening proposed by a layman. You are not only a focus of research in pure science, you not only have a membership of 4,000 Fellows, but I see at these tables to-night inorganic and organic chemists, analytical and physical chemists, and not least of all, perhaps, biochemists. I won't suggest that the specialisation which is obviously taking place in your ranks has gone quite as far as the young American medical student of whom Dr. Howe told us in Philadelphia last autumn, who announced his intention of specialising in the ear, but had not made up his mind whether it was to be the right ear or the left. But specialisation there certainly is. Indeed, the foundation of the Society was an act of specialisation in 1841; when the Royal Society was first founded, I find from those

interesting records in *Nature* that the discussions ranged quite easily from naval architecture to the distillation of charcoal, from the anatomy of animal intestines to the discussion of a new digester for the brewing industry. Well, every one of those fields now has its own special society or societies. Specialisation must continue, I imagine, and increase, and yet to me as a layman I think there seems to be a movement in progress which must tend to counteract any disadvantages there might be from excessive specialisation; I mean the obvious tendency for different sciences to co-operate in the solution of the more difficult problems that are in front of you.

Professor Wynne, in his address this afternoon, referred to the Department with which I happen to be connected, and spoke of the share which chemists had undoubtedly had in the movement that led to the establishment of that Department. But I do not think that even you perhaps fully realise how close the link always has been, and I imagine always must be, between any organisation established to encourage scientific research and the chemists. Just look back. Professor Wynne's address was partly concerned in dealing with the review that Professor Meldola took before the war—I think in 1907—of the difficulties of the research worker in this country. Professor Meldola, a Past-President of this Society, was an original member of the Advisory Council of the Department of Scientific and Industrial Research and remained a member of that Council until his unfortunate death. Your new President, Dr. Crossley, is Director of Research to the largest Research Association for Industry that has come into existence since those difficult days of the war, the British Cotton Research Association, and that Association and Dr. Crossley are working in constant and continuous co-operation with the Department. Dr. Slater Price, another officer of this Society, is Director of the British Photographic Research Association; Sir Herbert Jackson, a former Vice-President, is Director of the Scientific Instrument Research Association; Dr. Pickard, a former member of your Council, is Director of the Leather Association; Dr. Scott, a Past-President, is a Director of the Laboratory established by the Department at the British Museum in order to study the best means of preserving antique objects of every kind; and finally there is your Treasurer, Professor Jocelyn Thorpe, who is to-day a member of the Chemistry Research Board of the Department and a member of many of its committees.

Now, my contact with all those distinguished men has made a double impression upon my mind. One is the adaptability of the chemist, and the other is his extraordinary power of penetration. Looking at the Research Association movement which I have

referred to already—incidentally there are twenty-four different industries which have organisations of this kind in this country, and the majority of the Directors of Research of those twenty-four Associations are chemists—I draw the conclusion that they must have great adaptability, because I happen to know that in many cases, and in some of the most outstanding cases, the chemists who have been called to those important posts knew nothing about the industry when they took up the appointment, and for that very reason have brought success. Professor Wynne told you this afternoon that those Associations have been useful because they have opened new posts to young men, and nothing could be more important than that. But I think he might possibly have added that these Associations have done more than that. I will tell you an experience of mine which explains. The other day I was in the largest textile mill in the world, and found that they have quite a large and busy research laboratory, and I was told that the reason that that laboratory had been established was because they had been so convinced of the value of research by the Association of which the firm was a member that they were determined to carry the matter further and have an organisation of their own within the works. That is going on all over the country; so that it is not merely if you look at it simply from the point of view of openings for young men—which after all is not the whole story—it is not merely that the Associations provide openings, but that in increasing measure the firms in the Associations as they come to realise the value of research will need the help of chemists and other men of science. And, sir, their power of permeation! Chemistry, it seems to me, has made its way already into almost every sphere of human life. You dictate to us, sir, what we are to eat, though I believe you are not entirely agreed as to the preservatives that should be used for our food; you give us new textiles to wear—or at least you give our wives new textiles to wear, and when we are ill you indicate to us, attracted as we are by the skilful advertisements of people who are out for that weakness of man that comes with illness, and you tell us where the medicines we are advised to take fail to come up to what they claim to be.

Now, sir, I could quite safely, with considerable safety, go on to tell you of the records of your great men who have been officers and Fellows of this Society. I could refer to the Central Library which you have established, which helps all the Societies connected with chemistry to have a nodal point from which they can gather their recorded information. I could speak of your research fund. I could tell you of the brave efforts you are making in spite of rising prices and a printers' strike to keep the publications going. But

if I did, I should only be telling you what you know far better than I do.

I am going to venture, sir, in view of the most excellent hospitality which you have offered me, and in view of the patience with which you, ladies and gentlemen, have listened to me up to the moment, I am going to venture to be bold, and to tell you how the present state of chemistry strikes a rank outsider.

I remember that when my brother-in-law, more than forty years ago, tried to teach me some chemistry, the molecule seemed to me a much more important thing than the atom. The atom, to my untutored mind, seemed a sort of axiom which you had to accept, but which compared with the interest of the molecule was a poor thing. Now I venture to think that possibly until comparatively recent times chemistry has concerned itself a good deal more with the molecule and its behaviour than with the atom. But is that condition going to last? The other night I heard a distinguished young biologist speaking of several sciences and claim as his belief that the central science of the future would be biology. He was prepared to take off his hat to physics and chemistry as important fundamentally, but the future lay with biology. One did not live in the cellars of a house, but in the upper storey. Well, as an outsider I am bound to say that I doubt that. To me, at any rate, and possibly to other people who are not chemists, chemistry seems to be taking increasingly a central position and bringing to its service the work, the tools, which other scientists on both sides of it are preparing. What has physics done recently from the point of view of chemistry? Has it not, by giving you the anatomy of the atom, and by revealing the structure of the space lattice, helped you to get a picture of three things—first, the mystery of chemical attraction, secondly, as Sir William Hardy, in his Bakerian lecture, pointed out, the phenomena presented by liquid and solid surfaces in close contact, and thirdly, the problem of catalysis. Those things are giving you, are they not, larger control over the speed and nature of reaction? But the engineer similarly is bringing in the tool of high pressure, and what will happen when the knowledge you already have, and these tools you already have, are brought to bear under the conditions of high pressure, it is very difficult to prophesy. And so you are forcing your way into the biological field. Another tool I fancy I see in your hands will be those mysterious accessory vitamins which link up your chemical work with those mysterious chemical reactions of the animal and vegetable organisms.

Well, sir, I have proved my incapacity for proposing this toast, and I will therefore ask you to drink to the health and future of the

Chemical Society, coupling with the toast the name of your President, Dr. Crossley.

Dr. ARTHUR W. CROSSLEY replied :—

I am sure the Society would wish me to thank you, Sir Frank Heath, very warmly for the way in which you have proposed this toast. My predecessor in this Chair has this afternoon answered, I think, fairly fully some of the remarks which you have made. He has expressed his appreciation of the efforts of the Department of Scientific and Industrial Research. Perhaps, as being somewhat intimately associated with that Department, I may be allowed to add one or two words. So far as my experience goes that Department is free from, shall we say, a Government monopoly—Red Tape, and is willing in every way possible to help anyone interested in the work it is doing. I have had some experience of the professional or professorial side of chemistry, and for the past five years I have had some experience of chemistry as applied to industry. I say, with full consideration of what I am saying, that in my opinion the Department has founded in the Industrial Research Associations a movement which is destined to play an all-important part in the future of this country. By no other means that I can conceive could science have been brought into those industries. I hope on some future occasion to speak somewhat more fully on this subject, and for the present, if you will not think it impertinent on my part, I should like to congratulate the Department on the big efforts which it has started and to say, " Don't be in the least discouraged by disparaging remarks that may be made about you."

I believe it is customary for the President on these occasions to make some reference to the affairs of the Society. This afternoon we had our Annual General Meeting, and by virtue of a decision arrived at, I find things weighing somewhat heavily on my shoulders. I refer to the decision which permits me to have the honour to occupy the position which I do at the present moment.

The election of one President, of necessity, means the retirement of someone who has occupied that post. It falls to more eloquent lips than mine to propose the toast of Professor Wynne this evening. I hope, however, that Professor Armstrong will forgive me if I say one or two words. When the time comes for Professor Wynne to apply for armorial bearings I would like to suggest that he take one single word for his motto, and that word is " Thorough." His sole aim has been efficiency, and in endeavouring to attain it he has not spared himself in the slightest degree. Few realise when he comes to a meeting and quietly says, " I think we should be well advised to do so and so," that this has possibly meant hours of thought, perhaps wrestling with the mystic language of charters and bye-

laws, perhaps the writing of numerous letters and documents. To do the right thing for the Society's welfare has been his sole object. I should like to speak on behalf of us all just one or two words to Professor Wynne. They are simple, but my long-standing friendship with him enables me to know, I think, that he will understand.

"Professor Wynne, we have learned to know something of the time, care and thought which you have expended on our behalf during the past two years. We appreciate; we are grateful."

The Chemical Society is rightly, in the opinion of its Fellows, a very exceptional and uncommon institution, indeed our forbears taught us to regard it as such. They did not found the Chemical Society of London, or England, or of Great Britain, they founded simply "the Chemical Society," and as such we are proud to regard it. We desire no addition: we ourselves are content to be chemists, without the added epithet of druggists which so many kind friends attempt to hurl at us. But I regret to say that when one consideration is taken into account we become quite unexceptional, quite common, and resemble most other societies, institutions, and individuals, inasmuch as we are finding it very difficult to make our income balance our expenditure. Up to the early days of 1914 we were quite a happy band, able to publish the original communications sent in by our Fellows, able to give our Fellows full value for their subscriptions and able to put by a small sum of money each year. In those days a page of the Journal cost 17*s*. 5*d*.; in 1921 the price had risen to £2 12*s*. 4*d*. It is true that at the present moment the price has fallen somewhat, but it is still well above twice the amount that it was in 1914. Moreover, the original communications are always on the increase, and we have now to make annual provision for the publication of 3,500 to 4,000 pages of Transactions alone. The situation is a very serious one from the point of view of the Society and it has given the Council furiously to think as to the possibilities of meeting it. The first step was to increase the subscription of our Fellows by 50 per cent. It is greatly to be regretted that it was found necessary to do so, for the majority of our Fellows are young men, and young chemists—in fact, I think I may say most chemists—are not over-burdened with this world's goods. The second step was to adopt the suggestion of the Treasurer to ask our Fellows to subscribe to a Publications Fund, the interest on which should be devoted to the upkeep of the Journal. We have raised in this way nearly two thousand pounds, but that is not enough, and we were faced this year with a possible adverse balance of some three thousand pounds. The Treasurer this afternoon told us we actually had a credit balance of some £210, but how has this been obtained? By ruthlessly cutting down the original communications

sent in for publication, to such an extent as to cause endless displeasure to authors and to leave it doubtful as to whether we are doing justice to their work; further, by asking Fellows to pay for the Annual Reports, which so far have always been distributed free, and by many other curtailments of our legitimate activities which, in my opinion, are greatly to the disadvantage of our Fellows and form a distinct danger to the prestige of British chemistry. Most societies, most institutions and most individuals themselves decide the pace at which they will live, and the pace is generally regulated by monetary possibilities. But the Chemical Society is again exceptional. The pace at which we are living has not been decided upon by ourselves, but has been decided upon by no less an authority than the nation.

I have stated that up to 1914 we were a happy band. In that year the nation spoke to us for the first time on record, I believe, but it spoke in no uncertain voice. It said, in the first place, "We are at war. We want certain drugs used for the alleviation of pain and suffering; we have so far obtained these supplies from abroad, and that source is now cut off. We are aware that these drugs have never previously been made in this country; we are aware that they require skilled labour for their production. Therefore we want you to prepare them for us." Well, those drugs were prepared by an organised effort on the part of the chemists of practically all the Universities and University Colleges in this country. Then came a second call. The nation said, "We want more explosives: T.N.T., picric acid, ammonium nitrate; we want acetone and dye-stuffs." Finally, there came a third call: "We want poison gas, poisonous and always more poisonous, and with each gas we want complete protection." I do not think it can be said that any of these calls were made in vain, or that the chemists of this country were found wanting in any way. So far as I know the chemists of this country, that is, the Chemical Society has never spoken back to the nation, but I suggest the time has come when this might be done, and in terms such as these:—

"In 1914 you asked us to do certain work for you, which we did to the best of our ability. We at once admit that some of our results were not forthcoming as speedily as we could have wished and in circumstances where speed was all important, due to the fact that the type of work which you asked us to do was new to us and we had perforce to gain experience. This experience has shown us clearly that in order to be prepared for any call which you may make upon us in the future, when delay may prove fatal, it is necessary that nothing should be left to chance, and it is therefore essential for us to carry out numberless researches so as to keep ourselves fully

informed of the possibilities of chemistry generally. Your requests of 1914 have greatly stimulated research activities in this country, and the publication of the increased number of papers has become a very serious matter to the Chemical Society, which can only meet the present situation by greatly curtailing its legitimate and rightful activities. In these special circumstances, will you not help us to carry on our legitimate work?"

I cannot think that such an appeal could possibly fall on deaf ears, for this very simple reason, that the Chemical Society through the efforts of its members has proved itself to be a national asset of the utmost magnitude and importance. Sir Frank Heath, once more I thank you for the way in which you have proposed the toast of the Chemical Society.

Professor Henry E. Armstrong (Past-President), in proposing "The Retiring President," Professor W. P. Wynne, said:—

Mr. President and Fellows of the Chemical Society, I ask you to lend me your ears and I hope I shall reach them. You have an unusual opportunity, an unusual spectacle, to offer to our guests to-night—that of a retiring President. The programme is wrongly printed. The "The" should be in Clarendon and "retiring" in italics. Presidents are not often retiring. Their business is to be unashamed and aggressive on behalf of the bodies they represent. A little more than two years ago I undertook two tasks: one, an easy one, was to convince the Society, the Council of your Society, that a particular person was *the* man for the office of President; the other, an almost impossible one, to cajole, to persuade, all but to force that particular person to recognise, as the walrus said, that his time was come to take on the many things pertaining to the President's office in our honourable body. It is little short of forty years ago, on March 27th, 1886, that he came to me as private assistant and had we been wise we should never have parted company. The years we worked together were the happiest and most fruitful of my life. We were not called upon to concentrate hydrogen ions; we never wasted time on noughts and crosses; no Lowry worried us with perpetual rechristenings of the already fully-named; we just quietly kept company with a hydrocarbon which was thoroughly well behaved and responsive. Our work was straightforward. There was no angle worship about it and we reported our results without fuss of any kind, in the briefest possible manner.

We put up ten signposts for the Di- and fourteen for the Trichloronaphthalenes and thereby demonstrated the truth of a doctrine fitly to be called, a *theory* of benzenoid structure, which I venture to say no *X*-ray analysis can upset. I think I may say

we were both proud of our exhibit at Wembley last year, when we thought of its implications. Our work pleased the Germans but it met with no recognition at home. It was unnoticed and that was a double compliment. It cost much toil during many years and a good deal of hard cash; neither of us made a halfpenny out of it.

I am told that Mr. Wells asks a couple of hundred pounds for a couple of thousand words. At all times, we could get what we wanted, what material we wanted, free of cost from Germany. We were never offered anything from our English works and our advice and assistance was never invited, although we worked in a technical college. Now, a great branch of the dye-stuff industry stands upon the foundation we built up. Yet neither before nor during the war, nor since, have we been asked to advise or assist in any way in the construction of the English edifice. Now, I modestly mention these points, in support of what the President said to-day as to the lack of co-operation between science and industry. When that address of his is printed, I trust that the measured terms in which he spoke on that subject will have their effect. I may say that the work was done in a sense *sub-rosa*, without official encouragement. I recollect on one occasion speaking to our hon. secretary, Sir John Watney, about research. His immediate reply was, "Your business is to teach boys, not to do research." That is the kind of encouragement we got in those days. This is the spirit that has been behind the comparative failure of our institutions to do original work, of which the President spoke to-day. It was not the primary fault of those who were working in the institutions.

I was glad to hear him speak out particularly on one subject—I think it was the keynote of his address—and say plainly that it is absurd for the Universities of this country all to attempt to do the same thing and on the same scale. Sir Frank Heath has told you of the tendency there is to specialise. A great lesson to be learnt by the Universities in this country is that they too must specialise. His University has no right to deal with anything but iron and steel and things of that kind. It will only be by specialising, that it will be possible for the several universities to effect the exchange of workers of which he spoke. Supposing we were to legislate to-morrow in the direction in which he spoke, all the research workers would drift to one or two places. That is a serious danger of any attempt of that kind.

Now to return to the man. My respect for his great ability as a worker, as a chemist and teacher and for the nobility of his character, has steadily increased with years. As a chemist, I

know of no better worker and teacher; as a man I have known no man so conscientious and self-sacrificing. I would recall to you the service he rendered as Editor in years gone by, of which our President gave so striking an illustration to-day. I wish the spirit he showed on that occasion could be manifest throughout the Society and I wish that Editors could be brought to take the same interest and at the same time show the same ability in their Editorial work that our late President displayed. You have heard how conscientious he has been. He has attended every possible meeting of the Society it has been possible for him to attend and he has done a great deal of outside work. Such a man deserves our thanks, not only for the work he has done, for the direct service he has rendered, more particularly must we thank him for the example he has set. Unsparing unselfishness is scarcely a present failing of the chemist, but the time is at hand when it must be your distinct characteristic.

Sir Frank Heath has rightly told you that after all it is not the atom but the molecule that is the real thing. The atom has no character until it joins up into the molecule. Speaking before the Institute of Chemistry recently, I said that chemists have reason to be proud of themselves on account of their achievements. At all events, the young women of the day are clad in cellulose and fine raiment mainly through your services. Even the Medical Research Council is faintly yearning for chemical aid. Sir Frank Heath spoke of Biology being the science of the future. Biology is nothing but chemistry when it comes to the real thing. Biology is making slow progress at the present time but most of the Bio-chemists, as I have said, are but bits of chemists. When they become chemists, there will be a real advance in vital chemistry and in medicine too. Still, with all this service to your score you have no recognised public standard and what is worse, no internal cohesion but lots of friction. You are not three hydrocarbons but more than thirty. Now is the time for you to show that you can come together, hold together, log roll together and organise together. There must be complete fusion of interests, I hold; an end must be put to the present chaos and inefficiency of publication. If necessary, to find funds, you must give up smoking. Your analyses will be more trustworthy if you do. There will be less tendency to believe in the transmutation of copper into lithium. No small temporary scheme will suffice. To be at all, you must be big.

Now, gentlemen, if you have any element of human feeling, you will sympathise with me in my determination to overcome to-night the modesty of your too-retiring President and join with

me in thanking him, with all possible warmth, for the distinguished way in which he has served the Society during the past two years and for the great example he has set by his unselfish devotion to the interests of our profession. I call upon you to join with me in drinking the future health and happiness of our late President, Professor Wynne.

Professor W. P. WYNNE, D.Sc., F.R.S., responding, said :—

I rise to thank you most heartily for the cordial way in which you have received the toast. I hope I may be allowed to regard it not as applying only to myself, but as including all those who have worked with me in the interests of the Society during the past two years. But for the loyal co-operation and cordial support of the officers, the Council and the office staff I could have done little or nothing, despite all the kind things Professor Armstrong has said in proposing the toast. He is my father in chemistry, and his eulogy is to be explained not by my merit but by the partiality often displayed by a parent.

As a father, Professor Armstrong is doubly fortunate, for, in addition to four distinguished sons who bear his name, he has a numerous chemical family of which I am proud to be the eldest. Two others of us, Sir William Pope and Professor Lowry, are also present this evening. As will have been gathered from what he said we may not be in complete agreement with our father's views on every subject—a not uncommon experience in families, chemical or otherwise—but that does not diminish in the slightest degree our affection for him or sincere appreciation of our fortunate upbringing.

Professor Armstrong referred to the date on which I became his private assistant. I had left South Kensington a few months earlier, and it was through Professor Japp's kind offices that this most happy chance came my way. If a reference may be permitted to the plea put forward this afternoon for the encouragement of migration, this crossing of Exhibition Road from the one College to the other did undoubtedly exercise a profound influence on my own career.

I had the good fortune to number among my teachers no fewer than seven Fellows of the Royal Society, five of them being Past-Presidents of this Society, and, on an occasion such as this, it is no less a pleasure than a duty gratefully to acknowledge my deep indebtedness to them. The first of these Fellows was Dr. George Gore, who, it may be remembered, published so long ago as 1865 an account of the modification in the properties of some seventy substances produced by complete desiccation, and thus was a pioneer in the field of research so closely associated with Professor

Brereton Baker's name. He was a self-made man. How he came to be chemistry master in King Edward's School, Birmingham, I do not know, but he had never been to a training college, and thus his originality had not been educated out of him. His method of judging the nature of our work was to suggest at the commencement of the class, that we should write a résumé of the previous lesson. This was assessed by the number of pages handed in at the end of a quarter of an hour, irrespective of the fact that some of them might contain six words and some of them sixty. That is the way in which I started to learn chemistry. Then, having left school, I went to evening classes after the day's work, and am a product of that system of " payment by results," under which science classes were farmed out to teachers, who were paid by fees based on successes achieved by their students in the examinations conducted by the Science and Art Department of those days. Despite the hard things which have been said about it, I do not think the system was wholly bad. At any rate it gave me my chance and to many others theirs. It provided, indeed, the only avenue to instruction in science subjects open to most students in the 'seventies of last century before University Colleges and Technical Schools came into existence. By its aid I went to South Kensington in 1881 and there had the great advantage of being a student under Sir Edward Frankland, Professor Percy Frankland and Professor Japp, who began my training in research. Thereafter followed the training as a teacher under Professor Armstrong, who taught me—nay, compelled me—to think; Sir Edward Thorpe, who brought me back to the old College, and Sir William Tilden, who last year, although in infirm health, did me the great honour of coming to the anniversary meeting and saying words which I shall never forget. I am to see him to-morrow, and I hope I may take to him from this gathering a message of affectionate regard and esteem. (Cheers.)

There is just one remark I should like further to make. Sir Frank Heath spoke in most appreciative terms of chemists and of their adaptability, for which we thank him. But it is only right to remember that the indebtedness to which he referred is not wholly on one side. I think the signal success which has attended the work of Sir William McCormick and Sir Frank Heath, neither of them men of science, in producing the result known as the Department of Scientific and Industrial Research, serves to show that success in such enterprises comes not only from a knowledge of men and affairs, but in no small measure from a sympathy with, followed by an understanding of, the type of problem to be solved.

As the thirty-ninth President, no longer retiring but retired, I salute my friend and colleague, the fortieth President, wishing him

as happy a time during his period of office as fell to my lot. Once again I thank you all most sincerely for the way in which the toast has been received. I do not deserve the praise; I have simply done my job.

The toast of "The Federated Societies" was given by Professor IRVINE MASSON, who said:—

There are, I suppose, few of us here who are so deeply learned in chemical politics as to be at once aware of what this term connotes; and I will therefore first adopt the old-fashioned plan of giving instruction by means of enumeration. The Chemical Society is affiliated with no fewer than seventeen others. Of the eighteen, four deal primarily with pure science—the Mineralogical, Faraday, Biochemical, and ourselves; twelve with the methods and the discoveries of pure science as applied to practical arts, namely the Society of Chemical Industry, Society of Public Analysts, Royal Agricultural Society, Institute of Brewing, Society of Dyers and Colourists, Society of Leather Trades' Chemists, Royal Photographic Society, Institute of Metals, Iron and Steel Institute, Ceramic Society, Society of Glass Technologists, Institution of Gas Engineers; and two are of a special character, namely, the Institute of Chemistry and the Association of British Chemical Manufacturers, which deal with chemists professionally and in their relation to the lay public.

What is especially made prominent by this list is, not so much the subdivision of pure chemistry, as the great number of ways in which the science as a whole has found a place in the business concerns of the nation. So evident is this, indeed, to chemists, that we have now and then to remind ourselves that if we have won the privilege of helping a little in the material welfare of our country, we cannot evade the responsibility which has thereby been entrusted to us. And, with this in view, the more we can do to foster intellectual sympathy between all kinds of chemists, the more will our science be able to serve the nation at large. And this is why there is a Federation of all these societies: it is a federation primarily *pro bono publico*, not merely *pro bono chemico*.

Let me indicate briefly two or three ways in which co-operation has usefully shown itself at present.

The Library of the Chemical Society has of late years been extended and is annually increased, with the set purpose of being useful not alone to its own Fellows but also to members of the other affiliated societies. Towards the heavy annual cost of this addition to its original function, many of these Societies have contributed; and now our Library, poorly housed though it is, is becoming a truly national asset. Last year, for instance, the

visits to consult our 30,000 volumes averaged about twenty-two per day; and of these, one-third of the consultations were made by members, not of the Chemical Society, but of other societies, while among the other two-thirds many were members of the Chemical Society and the others as well.

Another example is seen in the co-operation between the Chemical Society and the Society of Chemical Industry which has set going the Bureau of Chemical Abstracts. The Bureau has done a great deal of quiet work already, and it has before it the central problem of unifying the British publications which survey each month or fortnight the whole of the world's current literature of chemistry. Surely no obstacle short of insuperable bankruptcy should be allowed to stand in the way of an end so desirable.

A collective token of federation is, I take it, to be seen in that body of delegates, the Federal Council for Pure and Applied Chemistry. There is something in this Council which reminds one of the luminiferous ether. It was originally invented to offer a medium for the propagation of light and radiation of energy, and to overcome the difficulty of action at a distance. Yet, I have been told, experiments made with the object of detecting it in motion have failed; and some daring moderns have even questioned the necessity for believing in it, and have dubbed it a pure convention.

Now there is a name which I have to couple with this toast—that of Mr. Woolcock. Chemists, as such, are trained to deal with things which are in themselves non-human; yet, because these things, and we ourselves, must everywhere affect human affairs, we need human guidance. It is to wise and experienced men like Mr. Woolcock that we instinctively turn for such help; and not one of you does not know how well and generously Mr. Woolcock gives it—think of one example alone, chemistry at Wembley. Mr. Woolcock fulfils the function of an ideal catalyser; for he starts, facilitates, or hastens actions, without upsetting any equilibrium, and himself emerges apparently unchanged at the end.

I ask you to couple with the toast of the Federated Societies the name of Mr. Woolcock.

Mr. W. J. U. Woolcock in his reply stated :—

I feel my efforts to respond to this toast will be somewhat inadequate, the more so as on looking at the toast list and seeing the term, "The Federated Societies," I did not know what was meant by it. My chemical education is, as you know, very limited. Hitherto I have supposed that I knew just sufficient chemistry to understand what the real chemist was talking about when I had to take his advice. For once I have failed. Professor Masson, convincing as

he is on most subjects, lucid to a fault on his own particular subject, has left me absolutely in the dark as to what is meant by the "Federated Societies." I at first thought that possibly it was a misprint and that Sir William Pope was intended to reply on behalf of the Federal Council. The delightful language in which Professor Masson brushed on one side the Federal Council leaves me in no doubt that he is not referring to that body, but he gave us, in order that we might know exactly about what we are talking, a list of learned bodies which, in the hope or in the anticipation of the Chemical Society, will ultimately become federated. Let us hope that that will eventuate. In future when I have to think of a reason why I should be considered a chemist, I shall always think of what Sir Frank Heath said, and regard adaptability as a qualification in a claim for that distinguished name, because I think it is a qualification which those of us who lack some qualification in science may readily embrace and regard as practicable, and in that way seek admission to the inner circle, because it is very true that the chemist is an adaptable person, and those who have to have something to do with him need to be adaptable as well.

It has been my fortune during the past twelve months to study two chemists at very close range. In fact, if I had attempted to define the Federated Societies I should have thought of a rather shorter list, and thought of the Chemical Society, the Institute of Chemistry and the Society of Chemical Industry, because of the real federation which has existed between those three bodies for some little time, and perhaps never more closely than during the past twelve months. I have been able to study at short range the Presidents of the Chemical Society and the Institute of Chemistry. We have travelled together, and it is a common thing for Professor Henderson and myself to speak together in different towns. That kind of intimacy brings familiarity and a working together which can only be obtained in that way. I remember that some time ago we arrived in Birmingham together. We had been in Glasgow the night before and had as usual said the proper thing about each other. Professor Henderson, when we got to Birmingham, called my attention to a placard just outside the station, and, after a quick glance, said, "They know we are coming," but not taking it quite as quickly as Professor Henderson, I saw that he was mistaken and I studied it a little more closely. The two Macs advertised there were not ourselves.

During the past twelve months there has been hardly a local branch of the Society of Chemical Industry or of the Institute of Chemistry that has not had a joint dinner. This indicates a desire for co-operation among the rank and file of which those who are

temporarily the leaders of the chemical societies and associations in this country will have to take notice.

I do not myself believe it is possible for the Councils of the various Societies to lay down a definite scheme for federation and to attempt to impose that on the local branches of the various Societies, but I do think that at the present time there is a demand throughout the country that we shall do something to prevent this appalling overlapping and duplication in the production of chemical literature, and do something which will satisfy the man who likes to consider himself in the rank and file and who at the same time feels that there is a definite need for a closer union among the Societies and the Associations.

Well now, neither Professor Wynne nor Professor Henderson nor myself is capable of doing that sort of thing individually. Together, of course, we have found it very easy. If we were upon a job which required modesty of demeanour, Professor Palmer Wynne did it. If it required some of that native shrewdness and ruggedness of character, Professor Wynne and I pushed Professor Henderson into it. If, of course, it were a mere torrent of words that was required, you know what would happen. But unlike the Duke of Plaza Toro, we have no desire to lead our Societies from behind, and in our individual capacity—not in our representative capacity—we have prepared a scheme for a Chemistry House to which each of us felt entitled to put his name, not binding our respective Societies or Associations in any way. This is a scheme which we feel we can recommend to those of our friends who are prepared to listen to our recommendations. I feel that with you, Dr. Crossley, in the chair in succession to Professor Palmer Wynne—and if I may say so, I welcome you very heartily in the chair—the work will continue.

We of the "Federated Societies," yes, of the Federated in inverted commas Societies, thank you very much indeed for inviting us to-night, and thank Professor Masson for proposing the toast. We wish the Chemical Society every prosperity during the coming year, and hope that the traditions which have been built up during the past four or five years of close working and co-operation between the officers of the various Societies will be maintained. We trust that under your guidance those traditions will continue and we may be even more successful in the coming year than in the past.

Professor F. G. Donnan, C.B.E., D.Sc., F.R.S. (Foreign Secretary), proposed the toast of "The Guests," coupled with the names of Professor Ernst Cohen, of Utrecht University (representing the Nederlandsche Chemische Vereeniging), and Mr. J. Hunter Gray, K.C., M.A. He said :—

We have here to-night four distinguished representatives of

Holland, Professor H. J. Backer, Professor Ernst Cohen, Professor A. F. Holleman, and Professor H. ter Meulen. Three of them are accompanied by their wives. May I say that we wish these ladies also a very hearty welcome to London and to the Chemical Society dinner.

I believe it is true that although the population of Holland is relatively small, actually the largest number of Nobel prizes has been given to that nation, which is a wonderful tribute to the scientific output and ability of Holland. It is nothing new, for that country has always been perhaps the greatest centre of scientific culture in Europe. I have great pleasure in saying a few words about my friend Professor Cohen, of Utrecht, whose name I have the honour to couple with this toast. I think it is rather late in the evening to refer to the distinguished work of Professor Cohen, but he is the most eminent pupil of that great man, Professor J. H. van't Hoff, and is one of the greatest authorities on the effect of high pressure on chemical reactions, and many other things.

When I come to look at the list of other distinguished guests associated with this toast, I feel like a miserable sinner transported to Paradise and asked to propose the toast of all the holy Saints. The Rt. Hon. Sir John Anderson, G.C.B. (Permanent Under-Secretary of State for Home Affairs), is one of our guests, and may I assure him, speaking as one Secretary of State to another, that if in the conduct of the affairs of this great country he wishes for any advice, the President of the Chemical Society will be always willing to help.

I have also the pleasure of coupling with this toast another name, that of one of those modest men of law, Mr. J. Hunter Gray. I have had the honour to be associated with him in one or two cases. It is needless to speak about these great men, because we all spend our nights reading the *Evening Standard*, and our days reading *The Times*, and we have the greatest admiration for their work.

There is one thing I should like to say before I conclude, namely, in reference to a very important part of the toast, that of the ladies present to-night. We wish them all a very hearty welcome.

It is my great pleasure and honour now to give you the toast of "The Guests," coupled with the names of Professor Cohen and Mr. Hunter Gray.

Professor Ernst Cohen, who replied for the Dutch chemists present, said :—

During the toast of my friend Donnan I made some notes, but it seems to be impossible to make a response to all the remarks he made in the toast. I think it would take too much time. This afternoon I had a warning from the new President of your Society

that everyone must be brief. I think there is no nation more fond of conciseness in speech than the English. Take, for instance, your chemical abstracts. When an English chemist wants to describe the properties of any substance or fluid he says: B.P. 100, F.P. zero, D.C. 80, and for those who are not familiar with those telegraphic hieroglyphics I will add that B.P. means boiling point, F.P. freezing point, D.C. dielectric constant.

In English literature or poetry you find absolutely the same thing. I remember an English rhyme made up of initial letters which, for those who are not in a hurry, I will translate:

A fishy old fisher, called Fisher,
Fished fish on the edge of a fissure.
The fish with a grin
Pulled the fisherman in.
Now they're fishing for the Fisher within.

But the most striking conciseness is found in the language of English daily life. When I have to write a letter to the Foreign Secretary of the Chemical Society I write: F. G. Donnan, M.A., Ph.D., F.R.S., F.S.C.S., London, W.C.1, and so I could go on. If I were to follow these lines in responding, I would have to condense them into a few initials, which in plain English would mean, "I wish to the Council and the Fellows of the Chemical Society, good luck, welfare, prosperity and happiness."

Ladies and gentlemen, as I am a foreigner, you will allow me to express myself in a somewhat more elaborate way. In the first place, I have to thank the Council and the Fellows of the Chemical Society in the name of my Dutch colleagues who were so kindly invited to attend this dinner and the Annual Meeting this afternoon, and also to thank you in the name of the Dutch Chemical Society whose representatives are prevented from being here and celebrating with you the birthday of this Society with which so many illustrious names are linked.

There is a French saying which means, "Every meeting we finish by a dinner whenever we can, and it is by a dinner that we rule over man." But I make an alteration in the last line and say, "It is our dinners which delight ladies and men." The question arises as to the origin of the custom of finishing such a meeting with a dinner. We have had two dinners to-day; in the afternoon our President gave us mental food in his most interesting lecture, and now we have material food. Whence comes the custom of linking the two? It is your countryman, Joseph Priestley, to whom you are indebted for this most pleasant custom. Priestley has been pictured in a fascinating way in a caricature by one of your countrymen as sitting at a dinner, but at a dinner which he never attended.

Priestley was a very wise man. He also invented soda-water, a very good remedy for many persons who have attended a dinner. I have been so lucky as to find the caricature, and I have had it copied and will ask you all to accept a copy not only as a memento of this splendid invention by your countryman, but also as a memento of most pleasant hours spent in your company. I feel sure that my Dutch colleagues will feel with me that we have had a very interesting meeting and enjoyable dinner with you, and thank you all for the very kind way in which you have invited and entertained us.

Mr. J. HUNTER GRAY also replied, saying :—

Professor Donnan, and members of the Chemical Society, a few days ago I had the burden and privilege to make the last speech at another meeting and I had taken the greatest trouble to prepare an impromptu speech to deliver on that evening. It passed through my mind that I might palm it off once more, but I had no sooner come into this room than I found two members of this company—Sir Frank Heath and Professor Armstrong—who had heard my last impromptu effort. Therefore I am thankful I had made preparations for another impromptu speech.

This toast recalls to me a set of questions and answers which appeared recently in one of the newspapers. The publication of those questions and answers was for the purpose of demonstrating the super-excellence of a system of education in this country for which we paid so many millions of pounds annually. One question put was, What is a Guest? One bright youth answered, "A Guest is a joke." Well, I hope the guests are not worse than jokes to-night, because I would rather be a guest than a nuisance, especially as I am making the last speech on the toast list. The guest who talks too much is apt to become a nuisance, so I will be quite brief. Another answer was, "A Guest is a person usually of the male sex who eats and drinks as much as he can and pays nothing for it." I suspect that the young person who wrote that answer was a precocious member of the other sex. But we do, as guests, come within that definition.

We to-night are guests of a most eminent body of scientific men, and it is inevitable that our thoughts should be extraordinary when we hear about molecules and atoms and the somewhat dubious relationship between them, and we may play with unusual ideas. For example, usually when I look at the menu and note the various courses and I see there is one course entitled *Saumon d'Écosse* with some other French words, I should say that was good Scotch salmon. But no such thoughts came into my mind to-night. When I put my knife into that salmon, I wondered if I should find at least a dozen of those bodies Sir Frank Heath referred to, vitamins,

running about, and perhaps I might even find a few of those bodies known by some curious names, and see the poor little vitamin running away and calling in terror-stricken tones, "Yadil, Yadil."

But let me be serious. I am not one of those, although a mere lawyer, who think that the premier gifts of scientific genius have departed from this country. I believe that in the future, as in the past, our British men of science will remain in the van of scientific progress. The whole world has marvelled at the wonderful work done by them, and especially, may I say, by our chemists in the Great War, and believing, as I do, that any future warfare will depend more and more upon scientific progress, I have no fear, if only the public and the Governments of this country will give to science that encouragement which it demands and which it deserves.

I am proud to be associated with the great scientist Professor Cohen to-night in responding to the toast of the Guests. We, the Guests, thank you, our Host.

Ordinary Scientific Meeting, Thursday, April 2nd, 1925, at 8 p.m., Dr. ARTHUR W. CROSSLEY, C.M.G., C.B.E., D.Sc., F.R.S., President, in the Chair.

The PRESIDENT referred to the loss sustained by the Society, through death, of the following:

Honorary Fellow.	Elected.	Died.
Guglielmo Körner	Jan. 20th, 1898.	March 28th.
Fellows.		
Charles Samuel Mummery	Dec. 5th, 1907.	March 27th.
Robert Atkinson Oddy	Feb. 21st, 1918.	March 12th.

The PRESIDENT announced:

1. That the Keith Gold Prize Medal of the Royal Society of Edinburgh awarded to the late Robert Traill Omond, LL.D., has been lent by Mr. Arnold Stevenson for exhibition in the Medal Case. It is hoped that other Fellows will add to the interest of the Society's Collection by loan or gift.

2. That the following Committees for 1925–1926 had been appointed by the Council:

Finance Committee: J. L. Baker, A. Chaston Chapman, F. P. Dunn, C. A. Hill, G. T. Moody, R. H. Pickard, and the Officers (Treasurer as Chairman).

House Committee: J. L. Baker, Sir Herbert Jackson, Alexander Scott, J. M. Thomson, Sir William Tilden, E. W. Voelcker, and the Officers.

Library Committee: P. P. Bedson, O. L. Brady, J. R. Partington (Chairman), Sir Thomas K. Rose, Alexander Scott, J. F.

Spencer, the Officers, and the Librarian, together with the following representatives of contributing Societies: J. L. Baker, R. B. Brown, J. C. Drummond, A. Harden, J. P. Longstaff, R. L. Mond, G. Senter.

Publication Committee: H. B. Baker, E. C. C. Baly, H. Bassett, O. L. Brady, H. W. Dudley, U. R. Evans, J. J. Fox, A. J. Greenaway, I. M. Heilbron, T. A. Henry, C. K. Ingold, H. McCombie, I. Masson, W. H. Mills, T. S. Moore, G. T. Morgan, J. R. Partington, J. C. Philip, R. H. Pickard, F. L. Pyman, N. V. Sidgwick (Chairman), W. P. Wynne, and the Officers.

Research Fund Committee: A. J. Allmand, H. B. Baker, E. C. C. Baly, J. B. Cohen, W. H. Mills, Sir Robert Robertson, R. Robinson, N. V. Sidgwick, Sir James Walker, W. P. Wynne, and the Officers.

The following were formally admitted Fellows of the Chemical Society: G. E. Gardam, G. E. Watts.

Certificates were read for the first time in favour of:

Neville Melton Bligh, A.R.C.S., A.I.C., 67, Castle Road, Bedford.
Hugh Alexander Millar Borland, M.Sc., A.R.C.S., 14, Cotham Road, Bristol.
Malcolm Sinclair Gaskill, 3, Buckingham Road, Hilton Park, Prestwich, Manchester.
Norman Hamer, Ash Mount, Holcombe, Manchester.
Ivor Gray Nixon, 75, The Vale, Golder's Green, N.W. 11.
Vincent Joseph Occleshaw, M.Sc., A.I.C., 22, Byrn Street, Ashton-in-Makerfield, Wigan.
Leon Rubenstein, B.Sc., 87, Eaton Grove, Swansea.
Alec Thomas Streather, B.Sc., A.I.C., 3, Wellington Road, Watford.
Violet Corona Gwynne Trew, 18, Adam Street, Portman Square, W. 1.

The following papers were read:

"The formation of *d*-2 : 2 : 4-trimethyl*cyclo*hexan-3-one-1-carboxylic acid from *d*-camphorquinone." By C. S. Gibson and J. L. Simonsen.

"Aromatic esters of acylecgonines." By W. H. Gray.

"The decomposition of hydrogen peroxide by cobaltic hydroxide." By F. G. Tryhorn and G. Jessop.

RESEARCH FUND COMMITTEE.

A meeting of the Research Fund Committee will be held in June next. Applications for Grants, to be made on forms which can be obtained from the Assistant Secretary, Chemical Society, Burlington House, W. 1, must be received on or before Monday, June 1st, 1925.

All persons who received grants in June, 1924, or in June of

any previous year, whose accounts have not been declared closed by the Council, are reminded that reports must be returned by June 1st.

PUBLICATIONS FUND.

In connection with the Appeal for the Publications Fund issued by the Treasurer, it has been decided that a list of donations and subscriptions received shall appear in the Proceedings for June. All donations and subscriptions received prior to the end of May will be included in the List.

LIST OF FELLOWS, 1925.

It has been decided to print the List of Fellows for 1925 and to supply the List to those Fellows who make application to the Assistant Secretary by the 31st July, 1925.

BERICHTE, 1915 to 1924.

Sets of the Berichte from 1915 to 1924 (10 years) are now offered to Fellows of the Society at £22, carriage extra. Application should be made to Mr. S. E. Carr.

List of Papers, or Abstracts thereof, received between March 20th and April 2nd, 1925. (This list does not include the titles of papers which have been read at a Scientific Meeting, or which have appeared in the Journal.)

"The thermal decomposition of ammonia upon various surfaces." By C. N. Hinshelwood and R. E. Burk.

"Strychnine and brucine. Part III. The position of the methoxyl groups in brucine." By F. Lions, W. H. Perkin, and R. Robinson.

"Compounds of tervalent molybdenum. Part III. New oxalates." By W. Wardlaw and W. H. Parker.

"The composition of starch iodide." By H. D. Murray.

"Note on the atomic volume of manganese." By A. N. Campbell.

"Note on molybdenum semipentoxide." By W. Wardlaw and F. H. Nicholls.

"The action of hydrogen chloride on *cyclo*hexylideneazine and on *cyclo*pentylideneazine." By W. H. Perkin and S. G. P. Plant.

"The constitution of soap solutions in the presence of electrolytes: sodium laurate and potassium chloride." By W. C. QUICK.

"The tautomerism of dyads. Part III. The effect of the triple linking on the reactivity of neighbouring atoms." By E. H. INGOLD.

"The molecular condition of phenol in benzene solution." By J. C. PHILIP and C. H. D. CLARK.

"The solubility of sulphur dioxide in water and in aqueous solutions of potassium chloride and sodium sulphate." By J. C. HUDSON.

CERTIFICATES OF CANDIDATES FOR ELECTION AT THE BALLOT TO BE HELD AT THE ORDINARY SCIENTIFIC MEETING ON THURSDAY, MAY 7TH, 1925.

BJERRUM, NIELS JANNIKSEN, Copenhagen, Vendersgade 28. Danish. Professor in Chemistry at the Royal Veterinary and Agricultural College in Copenhagen. Researches on liquid potentials, on complex compounds, especially of chromium, on the ionisation of electrolytes, on the thermic dissociation of water and carbon dioxide, on the theory of titration, on the atomistic explication of ultra-red spectra, etc. (*Signed by*) F. G. Donnan, J. N. Collie, W. E. Garner.

BLUNSDEN, ARCHIBALD BERESFORD, "The Bungalow," Westbury-on-Trym, Bristol. English. Asst. Tech. and Analytical Chemist. Employed for over five years by The British Oil and Cake Mills, Ltd. (Bristol branch) in research, etc., in their laboratory and works. Evening study at the Merchant Venturers Tech. College, including lectures, advanced analysis, and research. City and Guilds of London Institute Final Certificate (Technological) in Oils, Fats, and Candle Manufacture. National Certificate in Chemistry. Desire to keep up-to-date with advance in the scientific world. (*Signed by*) Arthur Marsden, M. W. Jones, Chas. J. Waterfall, S. Siddons Wilson.

BLYDE, GEOFFREY ALGER, "East Cliffe," East Bank Road, Sheffield. British. Steel Maker at A. Blyde & Co., The Wallace Steel Works, Sheffield. Late Student of Metallurgy, Applied Science Department, The University of Sheffield. I am desirous of joining with a view to extending my knowledge of Chemistry and Metallurgy by the use of the Society's Library and Journals. (*Signed by*) John Evans, L. Archbutt, J. E. A. Blyde.

BOWLES, THOMAS HENRY, "Allandale," Meadowside Rd., Cheam, Surrey. British. Chemist, 1st Grade, Government Chemists' Department. 28 years Government Chemists' Department. (*Signed by*) R. Robertson, Geo. Stubbs, J. J. Fox.

BRINDLEY, WILLIAM HARRISON, 11, Millmoor Terrace, Glossop, Derbyshire. British. Demonstrator in Chemistry, Faculty of Technology, University of Manchester. M.C., M.A. (Cantab.), M.Sc.Tech. (Manc.), A.I.C. Demonstrator as above since 1921. Joint author of "An Attempt to Resolve Quaternary Phosphonium Compounds," and "Some Esters of Anisic Acid." (*Signed by*) Frank Lee Pyman, Fredk. M. Rowe, John K. Wood.

BUCHAN, JAMES LINDSAY, Hampden Club, London, N.W. 1. British.

Physico-chemical Research Student, University College, London. B.Sc. (Lond.), Hons. Chemistry. (*Signed by*) F. G. Donnan, W. E. Garner, D. McKie.

BULL, FRANK HENRY CHARLES, 50, Cornwall Road, Bishopston, Bristol. British. Works Chemist in the employ of Bristol Gas Company, Bristol. B.Sc. degree 1916 (Bristol University) (Subjects: Chemistry, Physics, Mathematics); Associate of the Institute of Chemistry, 1919; Full Technological Certificates in Gas Engineering and Gas Supply from City and Guilds of London Institute, 1923—4. (*Signed by*) F. Francis, J. W. McBain, M. E. Laing.

BUTLER, JOHN ALFRED VALENTINE, "The Potteries," Winchcombe, Glos. British. Assistant Lecturer in Chemistry, University College of Swansea. M.Sc. (Birmingham), 1922. Author of papers: *Trans. Faraday Soc.*, **19**, 659, 729, 734, 1924; *J. Phys. Chem.*, **28**, 438, 1924; *Phil. Mag.*, **48**, 746, 927; *Zeits. phys. Chem.*, **113**, 279, etc. *J.C.S.*, 1923, pp. 2370, 2380; 1924, pp. 963, 1101 (jointly with other authors). (*Signed by*) G. T. Morgan, S. R. Carter, J. E. Coates, L. E. Hinkel, E. E. Ayling.

BYFORD, ANNIE LAVINIA, 73, Elderton Rd., Westcliff-on-sea, Essex. British. Student of Chemistry. B.Sc. (Pass). Studying for B.Sc. Honours in Chemistry at Bedford College for Women. (*Signed by*) J. F. Spencer, H. Crompton, P. V. McKie, E. R. Levy.

CLEGG, JAMES HERBERT, "West Cliffe," Queens Park Rd., Burnley. British. Engineer and Manager, Burnley Corporation Gas Dept. Member of the Institution of Gas Engineers. My object in seeking membership of your Society is to extend my knowledge of and assist in the furtherance of Chemical Science. (*Signed by*) Raymond Ross, Ernest Hardiker, J. P. Leather.

COCKROFT, HORACE CECIL, 6, Highfield Terrace, Halifax. British. Schoolmaster. London, B.Sc., 2nd Class Hons. Chemistry, 1922; Associate of the Institute of Chemistry, Jan. 1923; Student at University College, Reading, 1919—1922. Research work on CuCN–KCN–H_2O system incorporated in paper, Bassett and Corbett, *J.C.S.*, Vol. **125**, 1924. (*Signed by*) Robt. D. Abell, H. Bassett, J. W. Dodgson.

COYNE, FRANCIS XAVIER, 160, Addison St., Blackburn, Lancs. English. Student at the Blackburn Technical College. Three years' work at a Manufacturing Chemist's as a chemist, in the laboratory. Proficiency in Chemistry, Physics, Mathematics, German, French, Latin, and Greek. (*Signed by*) G. W. F. Holroyd, Harry G. Leigh, Robert H. Pickard.

CRAIK, JAMES, The University, St. Andrews. British. Carnegie Research Fellow. M.A. 1920 (St. Andrews). B.Sc. 1921 (St. Andrews). Ph.D. 1924 (St. Andrews). Author of a paper entitled "The Mechanism of the Oxidation of Typical Carbohydrates with Hydrogen Peroxide and Hypochlorous Acid," *J. Soc. Chem. Ind.*, 1924, **43**, 171. At present engaged in Research Work in the Chemistry Department, University of St. Andrews. (*Signed by*) J. C. Irvine, John Read, G. M'Owan.

DANE, HERBERT GREETHAM, The Diocesan Training College, Winchester, Hants. British. Tutor and Lecturer (and Demonstrator) in Chemistry at the Winchester Training College. B.Sc. with First Class Honours in Chemistry, Sheffield, 1922. M.Sc. (Sheffield) 1923. Worked under Dr. J. Kenner 1921–22 on the Influence of Steric Factors on Intramolecular Condensation, see J. Kenner and E. Witham, *T.*, 1921, 1452. (*Signed by*) W. P. Wynne, F. G. Tryhorn, Arthur W. Chapman.

DEAN, HARRY, 134, New Lane, Oswaldtwistle, nr. Accrington. English.

Textile Chemist and Colorist. Assoc. Manchester Coll. of Technology (Bleaching, Dyeing, and Printing, including advanced Organic Chem. and Dyestuffs Intermediates). 3rd year College Certificate of Blackburn Tech. Coll. (Inorg. and Organic Chem. and allied subjects). (*Signed by*) Percy J. Rhodes, G. W. F. Holroyd, E. Knecht.

DIXON, MARGARET STEDMAN LEONORA, Homebush, Worcester Rd., Sutton, Surrey. British. Student. A student taking a B.Sc. Honours Degree in Chemistry at Bedford College for Women (University of London). (*Signed by*) J. F. Spencer, H. Crompton, P. V. McKie.

FARNELL, ROBIN GEORGE WESTBURY, Exeter College, Oxford. British. Chemist to the British Empire Sugar Research Association, 3, 5, 7, Old Queen St., S.W. 1. A.R.C.S. A.I.C. Research into the colloidal constituents of the juice of the sugar cane. (*Signed by*) James C. Philip, M. A. Whiteley, H. B. Baker.

FAULKNER, IRVINE JOHN, Emmanuel College, Cambridge. British. Research Student. (*Signed by*) T. M. Lowry, R. G. W. Norrish, L. P. McHatton.

FLETT, THOMAS, Anchor Cottage, Kirkwall, Orkney. British. Chemist. At present Works Chemist in a Factory. 4 Years' Course at Glasgow University, 1919—1923; Graduated B.Sc. (Applied Chem.) and was elected A.I.C., 1923; Works chemist at Thornley Binders, Ltd., since January 1924. (*Signed by*) G. G. Henderson, T. S. Patterson, R. Wright, S. Horwood Tucker.

GARDNER, THOMAS JAMES ELIJAH, 12, Bushwood Road, Kew, Surrey. English. Works Chemist (Consol Products, Ltd., Sunbury Common, Middlesex). 30 Years' experience in Manufacturing Chemistry, especially in the investigation and perfecting of Synthetical Essences and like products. I am anxious to keep in touch with the developments of modern Chemistry, particularly as applying to my own work. (*Signed by*) Francis W. Hodges, Frank A. Boys, Archibald Macpherson.

GARRAN, RICHARD RANDOLPH, Orphir, St. George's Rd., Toorak, Melbourne, Australia. Research student at the University of Melbourne. Bachelor of Science (Melbourne), 1st class Honours and Exhibition in Chemistry in first and second years, 2nd class in third year. Has since done a year's research (heterogeneous equilibrium) and is at present reading for Final Honour Examinations in Chemistry. (*Signed by*) A. C. D. Rivett, E. J. Hartung, W. Davies.

GIBLIN, JOHN CHARLES, 3, Kensington Terrace, Brecon, Wales. British. Science-master, Christ College, Brecon. Bachelor of Science (London, 1st Hons. Chem.). Associate of the Institute of Chemistry. (*Signed by*) W. J. Jones, Claude M. Thompson, E. P. Perman.

GILCHRIST, HELEN SIMPSON, 82, North St., St. Andrews. British. Research Chemist, Food Investigation Board, D.S.I.R. B.Sc. (St. Andrews), 1917. Ph.D. (St. Andrews), 1921. Author of a thesis on "The Preparation and Constitution of Synthetic Fats, containing a Carbohydrate Residue." Assistant in Chemistry, The University, St. Andrews, 1918—21. Joint author, with Principal Irvine, of (1) A Synthetic Fat, etc., *T.*, 1924, **125**, 1. (2) Condensation of Mannitol with Olive Oil, *ibid.*, 10. (*Signed by*) J. C. Irvine, John Read, G. M'Owan.

HADFIELD, ISABEL HODGSON, 65, Langham Rd., Teddington, Middlesex. English. Research Chemist. M.Sc., London University. Seven years' research work for the Aeronautics Advisory Committee. Member of the staff at National Physical Laboratory. (*Signed by*) Guy Barr, L. L. Bircumshaw, J. T. Hewitt.

HALPIN, JAMES FRANCIS, St. Chads, 39, Benson Road, Forest Hill, S.E. 23. British. Superintending Chemist, Government Chemist's Department. Superintending Chemist in the Government Laboratories. Fellow of the Institute of Chemistry. (*Signed by*) Robert Robertson, Geo. Stubbs, A. More, J. J. Fox.

HANSON, DONALD, 7, Willow Bank, Halifax. English. Works Chemist. Passed in Physics as subsidiary to taking Honours B.Sc. (External) of London University. Also 8 years' Laboratory and Technical Experience in Explosive Manufacture, Tar Distillation, Textile Chemistry, and Analytical Work. (*Signed by*) W. Sowden, G. C. Riley, W. J. Stansfield.

HAWORTH, THOMAS, 8, Park Terrace, Fielding Lane, Oswaldtwistle, Lancs. English. Assistant Gas Engineer and Manager, Oswaldtwistle Urban District Council. (*Signed by*) G. W. F. Holroyd, Harry G. Leigh, J. T. Holden.

HEATON, JOHN STANLEY, 43, Birch Rd., Crumpsall, Manchester. British. Research Chemist. Student and research worker at Liverpool University for five years. B.Sc. (1st Hons.). Ph.D. Now engaged on research in textile industry. "The Investigation of Meso-thioanthracene Derivatives. Part I," Heilbron and Heaton, *J.C.S.*, 1923, **123**, 173. (*Signed by*) I. M. Heilbron, William Doran, F. C. Guthrie.

HENSMAN, JOHN CYRIL, M.A., A.I.C., Aldenham School, Elstree, Herts. British. Chemistry Master, Aldenham School. 1921, Cambridge Natural Sciences Tripos, Part I (Chem., Physics, Physiology); 1923, Cambridge Natural Sciences Tripos, Part II (Chemistry); 1923, elected to an Associateship of the Institute of Chemistry; 1923–4, Asst. Science Master, Rotherham Grammar School, Yorks.; 1924, Chemistry Master, Aldenham School. (*Signed by*) T. M. Lowry, W. H. Mills, Charles T. Heycock.

HILL, JOSEPH, 58, Spring St., Accrington, Lancs. English. Chemist (Works). Past Blackburn Tech. College, 4th year Day Course. Occupation: Chemist, East Lancashire Soap Works. (*Signed by*) G. W. F. Holroyd, Harry G. Leigh, J. T. Holden.

HOCKING, FREDERICK DENISON MAURICE, 18, Woodside Park Road, N. Finchley, N. 12. British. Biochemist (and at present Final Year Medical Student, Univ. of London). M.Sc. (Lond.) with mark of distinction. A.I.C. (1920). A.C.G.F.C. and Streathfield Memorial Prize, 1919. (*Signed by*) A. Prideaux Dawson, Arthur J. Hale, H. M. Atkinson.

HOYLE, JIM, 11, Crow Lane, Ramsbottom. British. Finisher (Woollen). 2nd and 3rd Year Certificates Chemistry gained at Blackburn Technical College. 1st, 2nd, 3rd, and 4th Year Chemical Trades Course. U.L.C.I., with distinction in Magnetism and Electricity. (*Signed by*) G. W. F. Holroyd, Harry G. Leigh, J. T. Holden.

HUGHES, HORACE WILLIAM, 27, Ombersley Rd., Balsall Heath, Birmingham. British. Schoolmaster. B.Sc. (Birmingham), Class 1 (1921). Principal Subjects: Metallurgy, Chemistry; Subsidiary: Strength of Materials. (*Signed by*) Harold Harris, Thomas Turner, Wm. Wardlaw.

JACKSON, JOSEPH TAYLOR, B.Sc. (Lond.), 192, Algernon Road, Lewisham, S.E. 13. British. Lecturer in Applied Chemistry at The Leathersellers' Company's Technical College, S.E. 1. Bachelor of Science, London University. Fellow Royal Microscopical Society, London. War service (France and Salonika), Sept. 1914–Jan. 1919. (*Signed by*) Arthur Harden, Charles Dorée, S. Judd Lewis.

JEHU, DAVID BRET, 34, High Street, Welshpool, Montgomeryshire. British (Welsh). Research Student. B.Sc., University of Wales, First Class Honours. M.Sc., University of Wales. Associate of the Institute of Chemistry. Paper

Jehu and Hudleston, *Trans.*, 1924, **125**, 1451. (*Signed by*) T. Campbell James, C. R. Bury, L. J. Hudleston, H. Medwyn Roberts.

JOBSON, WILLIAM, 52, The Mall, Swindon, Wilts. British. Analytical Chemist. Asst. Analyst in G. W. Rly. Chemical Laboratory, Swindon, for the last 25 years (less 4½ years' war service), appointed Chief Assistant, May 1922. Board of Education, S. and A. Dept., Inorganic Chemistry (Practical), Honours Part 1, 1903, Pass. (*Signed by*) W. R. Bird, T. C. Davison, T. Hartley.

JONES, CLIFFORD MERTON, Buxton Crescent, Newton Hill, Leeds Rd., Wakefield. British. University Student (post graduate). Science student at Queen Elizabeth's Grammar School, Wakefield (1914–1920). Laboratory assistant for two years (part time). Student in Science at University of Leeds, 1921 onwards. 2nd Class Honours B.Sc. in Chemistry, July 1924. (*Signed by*) J. B. Cohen, W. Lowson, W. A. Wightman.

JONES, THOMAS WILLIAM, 36, St. Vincent Road, Westcliff-on-Sea. English. Technical Chemist. B.Sc. (Hons. Chem.), London 1922. (*Signed by*) J. R. Partington, E. E. Turner, Stephen Miall, W. G. Shilling, F. A. Williams.

KEANE, JOHN, 6, Shamrock Villas, Drumcondra, Dublin. Irish. Assistant Lecturer in Chemistry, University College, Dublin. B.Sc. (First Hons.), 1917. M.Sc. 1918. Ph.D. 1922 (National University). (*Signed by*) A. G. G. Leonard, A. O'Farrelly, Sydney Young.

LUCY, ALFRED, 16, Chesney Street, Battersea, London, S.W. 11. British. Junior Assistant Chemist. Twelve years' Practical Chemical experience in Works and Research Laboratories (*i.e.*, The Gas Lighting Improvement Co., Ltd.), etc. Chemistry student, attended classes up to and including the B.Sc. Standard in Theoretical and Practical Inorganic and Organic Chemistry. Battersea Polytechnic certificates for Inorganic Chemistry and Oils, Fats, and Waxes. (*Signed by*) William A. Godby, J. L. White, John Wilson.

MABBOTT, ERNEST EDWARD, 358, Fore Street, Edmonton, N. 9. British. Student. B.Sc. Engaged upon Organic Research work at East London College. (*Signed by*) J. R. Partington, E. E. Turner, A. T. Healey.

MCDOWALL, DAVID, 2, Kennishead Road, Thornliebank, Glasgow. British. Process Supervisor, Calico Printers, Ltd., 8 years, Manager, McDowall, Morrison & Co., Ltd., Chemical Manufacturers, and interested in research on behalf of Chemical Industry and in connection with Manufacturing Chemistry. (*Signed by*) Robert Craig McDowall, W. McHutchison, Andrew S. Matchett.

MANSKE, RICHARD H. F., The University, Manchester. British. Research Student in Chemistry, Victoria University, Manchester. B.Sc. 1923. M.Sc. 1924. Queen's University, Kingston, Canada. 1851 Exhibition Scholar, 1924—from Canada. (*Signed by*) Arthur Lapworth, R. Robinson, J. Kalff.

MOIR, HUGH CLOUSTON, 7, Craigielea St., Dennistoun, Glasgow. British. Chemist. Bachelor of Science (Applied Chemistry), Glasgow University. Associate of the Institute of Chemistry. Presently employed as Chemist by Wm. Beattie, Ltd., Dennistoun Bakery, 116, Paton St., Glasgow. (*Signed by*) G. G. Henderson, T. S. Patterson, S. Horwood Tucker.

MORTON, RICHARD ALAN, 2, Lumley Street, Garston, Liverpool. British. University Lecturer (Inorganic Chemistry). B.Sc., Ph.D. (Liv.), A.I.C. Several papers, *J.C.S.*, *Jour. Phys. Chem.* (*Signed by*) E. C. C. Baly, Harold Rogerson, I. M. Heilbron.

MOULDS, FREDERICK WILSON, Hill Crest, Villa Road, Nottingham. British. Chemist and Druggist. Member of the Pharmaceutical Society. Chemist

in charge of the Laboratories of Messrs. Newball & Mason, Ltd., Nottingham, and a director of the firm. Late student of the University College, Nottingham, where I studied Chemistry and Pharmacy, also Industrial Bacteriology. (*Signed by*) F. S. Kipping, J. B. Firth, F. C. Laxton, Wm. H. Sims.

MYLES, ANDREW JOSEPH, 12, Gardner Rd., Tue Brook, Liverpool. British. Works Manager and Chemist. 20 Years' experience in Tar Distillation and research work on Roads Compositions. Have written and read papers on treatment of and construction of modern road surfaces. Designed a viscometer for tar and bituminous compositions. (*Signed by*) George Tate, George S. Irvine, Thomas J. Roberts.

NASH, ALFRED WILLIAM, 18, Prospect Rd., Moseley, Birmingham. British. Professor of Oil Engineering and Refining. B.Sc. degree for original researches on the "Pyrogenesis of Hydrocarbons." "The Berginisation of Coal and Oil," author, *Journ. Inst. Pet. Technologists*, Vol. **10**, 43. "Fuel Oil Resources of the Future," joint author, *Journ. Inst. Pet. Tech.*, Vol. **10**, 47. "Somerset Oil-shales," joint author, *Journ. Inst. Pet. Tech.*, Vol. **10**, 47. 1907–22, engaged in Oil Refineries—eventually General Manager. 1922–present, Birmingham University, Senior Lecturer, afterwards Professor. (*Signed by*) G. T. Morgan, A. E. Dunstan, Harold Harris.

OAKLEY, HENRY BOWEN, Wellcome Tropical Research Laboratories, Khartoum, Sudan. British. Assistant Government Research Chemist. Diploma of Imperial College. M.Sc. London. A.R.C.S. London. In conjunction with Prof. J. C. Philip, *J.C.S.*, 1924, **123**, 1189. (*Signed by*) A. F. Joseph, James C. Philip, M. B. Donald.

PALMER, EDGAR KENT, Rose Bank, Victoria Rd., Hale, Altrincham. British. Post-graduate research. Oct. 1919–July 1923, Student at College of Technology, Manchester, in full-time degree course in the Chemical Technology of Textiles. July 1923, Grad. B.Sc.Tech. June 1924, Research under Prof. E. Knecht, Ph.D., and at present the same. (*Signed by*) Frank Lee Pyman, Edmund Knecht, John K. Wood.

POMERANTZ, DAVID, 15, Nottingham Place, Commercial Rd., E. 1. British. Student. Inter B.Sc. Two years at Royal College of Science for the 3 years necessary for the associateship (Chemistry). Am now doing the honours course at West Ham M. C. (*Signed by*) H. Bogdanor, George Dean, R. S. Glennie.

RAWLINGS, HARRY, 15, Station Road, Ramsey, Huntingdon. British. Science master (Chemistry). B.Sc. Lond., 2nd Hons. Chemistry, 1921. Assistant Analyst, Messrs. Boots Pure Drug Co., Ltd., 1915–17. Unpublished research on organic derivs. of tin, under Prof. Kipping at Univ. Coll., Nottingham, 1921 and early 1922. Chemistry student at Univ. Coll., Nottingham, 1917 and 1919–22. Am at present working for M.Sc. (Lond.) [May 1925], and desire access to the Library of the Society. (*Signed by*) F. S. Kipping, E. B. R. Prideaux, J. B. Firth.

REED, JOHN BRENT, 49, St. Mildred's Rd., London, S.E. 12. British. Assistant Research Chemist in the Research Laboratories of the South Metropolitan Gas Coy. Bachelor of Science, London. Associate of the Institute of Chemistry of Gt. Britain and Ireland. Student at Birkbeck College for the degree of Doctor of Philosophy. (*Signed by*) George Senter, S. Sugden, Walter T. J. Morgan, S. Medsforth.

RHODES, WILLIAM GEORGE, Park View, 318, Granville Rd. Park, Sheffield. English. Senior Science Master, Firth Park Secondary School, Sheffield. (*Signed by*) C. K. Ingold, John Evans, A. S. Russell.

ROBERTSON, GEORGE JAMES, M.A., B.Sc., Ph.D., The Manse, Strathkinness,

St. Andrews, Fife. British. Assistant in Chemistry and Carnegie Teaching Fellow in the University of St. Andrews. A thesis entitled "Investigations on Cellulose." Conjoint paper read by Principal Irvine before the American Chemical Society. (*Signed by*) J. C. Irvine, John Read, G. M'Owan.

SALMON, ROBERT JOSEPH, C.M.S. Medical Training College, Hangchow, Chekiang, China. British. Lecturer in Chemistry, Medical Training College, Hangchow. M.Sc. Manchester. (*Signed by*) Arthur Lapworth, Frederick Challenger, John F. Wilkinson, Harold Mastin, D. H. Bangham, Fred Fairbrother.

SHEPHERD, JOHN ROBERT, Lady Hall Farm, Broughton-in-Furness, Lancs. British. Chemist. M.Sc. (London) in Chemistry. A.I.C. (*Signed by*) Robert H. Pickard, J. Kenyon, J. L. White, A. Houssa, Harold Hunter.

SINGH, TERRAIN, alias PREM CHANDRA SHARMA, Engineering College Hostel, Benares Hindu University. Indian. M.Sc. Demonstrator in the Department of Industrial Chemistry of B.H.U. M.Sc. of the Benares Hindu University with a thesis on "The Effect of the Size of the Soil-particles and Electrolytes on the Equilibrium of Moisture between the Seed and the Soil." (*Signed by*) Phuldeo Sahay Varma, S. S. Bhatnagar, N. R. Dhar.

SMITH, ALAN LAWRENCE, Bank House, 22, Dean St., Blackpool. British. *Trans. Chem. Soc.*, 1923, **123**, 1046–1055, "The Interaction of Hydrogen Sulphide, Thiocyanogen and Thiocyanic Acid on Unsaturated Compounds." M.Sc., Victoria University. (*Signed by*) Henry Stephens, Frederick Challenger, F. P. Burt, D. H. Bangham, Fred Fairbrother, John F. Wilkinson.

THORN, GEORGE, Grove House, Beechen Grove, Watford. British. Science Master, Boys' County School, Harrow. B.Sc. (Bristol). (*Signed by*) F. Francis, J. W. McBain, F. W. Rixon.

TOWNSEND, LEONARD WILLIAM ERNEST, 35, Harewood Rd., Collier's Wood, Merton, S.W. 19. British. Assistant Chemist at the South Metropolitan Gas Co., 709, Old Kent Rd., S.E. Student, five years' laboratory training. (*Signed by*) S. Medsforth, E. de Barry Barnett, P. C. L. Thorne.

WALKER, LESLIE JOHN, 45, Devereux Road, Wandsworth Common, S.W. 18. British. Student at the School of Pharmacy of the Pharmaceutical Society of Gt. Britain, 17, Bloomsbury Sq., W.C. 1. Pharmacist, have passed Qualifying Exam. of Pharmaceutical Society of Gt. Britain. Chemistry is included in this Exam., and it is my intention to continue studies in same. At present studying for Major Exam. of Pharmaceutical Society. (*Signed by*) C. E. Corfield, F. Browne, F. H. Lowe.

WALKER, THOMAS KENNEDY, 4, Swythamley Road, Cheadle Heath, Stockport. British. Research Chemist to the Institute of Brewing, Research Scheme Committee. Degrees: M.Sc., Ph.D., Victoria University of Manchester. Fellow of the Institute of Chemistry. Two years' research for the Admiralty, and for two years as Assistant Chemist to Sir R. Robertson, F.R.S., in the Research Department, Royal Arsenal, Woolwich. Three years' research in Organic Chemistry with Professor A. Lapworth, F.R.S., at Manchester University. For the past three years I have been assisting Professor F. L. Pyman, F.R.S., in investigations on the preservative principles of hops under the Institute of Brewing Research Scheme. Publications: "Preparation of Sodium Ethoxide from Caustic Soda" (*Journ. Soc. Chem. Ind.*, 1921, **40**, 172T); "Condensation of Aryldiazonium Salts with Monoalkylated Malonic Acids" (*J.*, 1923, **123**, 2775); "Condensation of Aryldiazonium Salts and of Alkyl Nitrites with Cyanoacetic Acid Derivatives" (*J.*, 1924, **125**, 1622); five other papers dealing with the antiseptics of hops, of which one was published jointly with Professor Pyman and Harold Roger-

son, Esq. (*Journ. Inst. Brew.*, 1922, **19**, 929; 1923, **20**, 373; 1924, **21**, 570, 712). (*Signed by*) Frank Lee Pyman, Fredk. M. Rowe, Jas. Grant.

WATERS, WILLIAM ALEXANDER, 35, Shirley Road, Cardiff. British. Research Student in Chemistry (Resident B.A. of Gonville and Caius College, Cambridge). Cambridge Natural Sciences Tripos, Part I, Class I, Cambridge Natural Sciences Tripos, Part II (Chemistry), Class I. Shuttleworth Research Studentship in Chemistry at Caius College, Cambridge. (*Signed by*) Hamilton McCombie, Harold A. Scarborough, Eric K. Rideal.

WATSON, JAMES BERNARD, 30, Mulgrave Road, West Hartlepool. British. Metallurgical Chemist. Four years in the laboratory of the Technical College, West Hartlepool. Seven years as chemist in the Chemical and Metallurgical laboratory of the Central Marine Engine Works, West Hartlepool. (*Signed by*) J. W. Patterson, Gilbert Palmer, D. Arthur Ruell.

WATTS, ERNEST SWANN, "Eaglesfield," Limefield Road, Kersal, Manchester. British. Chief Chemist, E. Griffiths Hughes, Ltd., Manchester. Qualifying Examination of the Pharmaceutical Society of Great Britain. (*Signed by*) S. Ernest Melling, Harry Brindle, Chas. Turner.

WHAMOND, ARCHIBALD STEELE, 22, Church St., Alloa, Clackmannanshire. British. Analytical Chemist. Studied Chemistry at Heriot Watt College, Edinburgh, Day and Evening Classes, 1911–1914. March 1914–Nov. 1923, Assistant Chemist, Messrs. Wm. McEwan & Co., Ltd., Edinburgh (Army Service, Sept. 1914–Jan. 1919). Nov. 1923–present time, Chief Chemist, Messrs. Geo. Younger & Son, Ltd., Alloa. (*Signed by*) John M. Guthrie, A. Scott Dodd, John Doull.

WOODCOCK, EDWIN JOHN, "Stonecot," Claremont Hill, Jersey, C.I. British. Assistant Official Analyst. For the past 28 years Assistant to F. W. Toms, Esq., F.I.C., Official Analyst of Jersey, namely, the first five years as private assistant and since then as senior assistant analyst to the States of Jersey. (*Signed by*) F. W. Toms, Bernard Dyer, Alex. K. Miller, F. G. P. Remfry, G. Neville Huntly, R. Le Rossignol.

WORTHINGTON, JOHN STANLEY, 27, Rowena St., Great Lever, Bolton. British. Works Chemist. Experience in manufacture of Heavy Chemicals at Messrs. John Smith Junr. & Co., Ltd., Great Lever Chemical Works, Bolton, since 1908. Student in Advanced Chemical Tech. at Manchester College of Technology. At present have control of large Sulphuric Acid Plant. (*Signed by*) Arthur Worthington, Frank Lee Pyman, T. Trevor Potts.

The following Certificates have been authorised by the Council for presentation to ballot under Bye-Law I (2):

BELL, JAMES MUNSIE, Dept. of Chemistry, Univ. of North Carolina, Chapel Hill, N.C., U.S.A. Canadian. Professor of Chemistry. Head of Chemical Department, University of N. Carolina. Formerly in Bureau of Mines, Washington, D.C., U.S.A. Numerous original publications, chiefly in the *Journal of the American Chemical Society*. (*Signed by*) James W. McBain.

CAMERON, JOHN, Peking Union Medical College, Peking, Chihli, North China. British (Scotch). Pharmacist to the above-named institution. Member of the Pharmaceutical Society of Great Britain. Publications as per attached list to date (17 articles). Instructor in Pharmacy in British Army in France, 1917–18. Lecturer in Pharmacy and Materia Medica in Peking Union Medical College, 1920–25. (*Signed by*) A. E. Newland.

MCINTYRE, GORDON, Sarnia, Ontario, Canada. Canadian. Chemist and Petroleum Technologist. Graduate McGill University, B.Sc., Ch.E. Chief

Chemist, Imperial Oil Refineries, Limited. (*Signed by*) Alfred Stansfield, Harold J. Roast.

THOMAS, Professor KARL, M.D., Leipzig, Liebig str. 16. German. Professor ordinar. für physiologische Chemie an der Universität, Leipzig, seit 1921. Mitarbeiter von Hoppe-Seylers Zeitschrift für physiologische Chemie (herausgegeben v. Kossel) und der Biochemischen Zeitschrift (herausgegeben von Neuberg). Schüler von W. Wislicenus, H. Thierfelder und Max Rubner, Mitglied der Biochemical Society. (*Signed by*) George Barger, Robert Robinson.

ADDITIONS TO THE LIBRARY.

I. *Donations.*

DUPARC, LOUIS, and BASADONNA, M. Manuel théorique et pratique d'analyse volumétrique. 2nd edition. By LOUIS DUPARC and PAUL WENGER. Paris 1925. pp. 214. ill. 18 *fr.* (*Recd.* 18/3/25.) From the Publisher: M. Payot.

FRANZEN, HANS. Margarine. (Chem. Tech. in Einzeldarstellungen.) Leipzig 1925. pp. viii + 100. ill. *Gm.* 10. (*Recd.* 31/3/25.) From the Publisher: Herr Otto Spamer.

INDUSTRIAL CHEMIST and chemical manufacturer: a journal devoted to the progress of applied chemistry and chemical engineering. Vol. I, etc. London 1925 +. (*Reference.*)

From the Publishers: The St. Margaret's Technical Press.

KÖNIGLICH PREUSSISCHEN AKADEMIE DER WISSENSCHAFTEN ZU BERLIN. Monatsberichte 1876 & 1881. Berlin 1877 & 1882. (*Reference.*) From the Royal Society.

LUNGE, GEORGE. The manufacture of acids and alkalis. Completely revised and rewritten under the editorship of ALEXANDER CHARLES CUMMING. Vol. IV. The manufacture of sulphuric acid (contact process). By FRANK DOUGLAS MILES. London 1925. pp. xvi + 428. ill. 36*s.* net. (*Reference.*)

From the Publishers: Messrs. Gurney & Jackson.

ROYAL TECHNICAL COLLEGE, [GLASGOW]. Journal: being a record of some of the research work carried out in the College by the staff and senior students. No. 1. Glasgow 1924. pp. 138. ill. (*Reference.*) From the Director.

THORPE, JOCELYN FIELD, and WHITELEY, MARTHA ANNIE. A student's manual of organic chemical analysis, qualitative and quantitative. London 1925. pp. x + 250. ill. 9*s.* net. (*Recd.* 19/3/25.) From the Authors.

II. *By Purchase.*

AMERICAN ENGINEERING COUNCIL. Industrial coal: purchase, delivery, and storage. New York 1924. pp. x + 420. ill. 21*s.* net. (*Recd.* 17/3/25.)

ANDÉS, LOUIS EDGAR. Vegetable fats and oils: their practical

preparation, purification, properties, adulteration, and examination. 4th revised and enlarged English edition. By HERBERT BIRTWHISTLE STOCKS. London 1925. pp. viii + 413. ill. 15*s*. net. (*Recd.* 17/3/25.)

BACK, E., and LANDÉ, A. Zeemaneffekt und Multiplettstruktur der Spektrallinien. (Struktur der Materie in Einzeldarstellungen.) Berlin 1925. pp. xii + 214. ill. *M*. 14·40. (*Recd.* 8/4/25.)

BASSETT, HENRY. The theory of quantitative analysis and its practical application. London 1925. pp. x + 308. 15*s*. net. (*Recd.* 25/3/25.)

BLAKE, ERNEST G. The seasoning and preservation of timber. London 1924. pp. xiv + 132. ill. 9*s*. 6*d*. net. (*Recd.* 17/3/25.)

BOHR, NIELS. The theory of spectra and atomic constitution. 2nd edition. Cambridge 1924. pp. x + 138. ill. 7*s*. 6*d*. net. (*Recd.* 25/3/25.)

BORN, MAX, assisted by FRIEDRICH HUND. Vorlesungen über Atommechanik. Vol. I. (Struktur der Materie in Einzeldarstellungen.) Berlin 1925. pp. x + 358. *M*. 15. (*Recd.* 8/4/25.)

COHEN, JULIUS BEREND. Practical organic chemistry. 3rd edition. London 1924. pp. xvi + 520. ill. 6*s*. 6*d*. net. (*Recd.* 25/3/25.)

FIELD, SAMUEL, and BONNEY, SAMUEL ROBERT. The chemical coloring of metals and allied processes. London 1925. pp. xx + 264. ill. 10*s*. 6*d*. net. (*Recd.* 25/3/25.)

FITGER, PETER. Racemisierungserscheinungen bei optisch-aktiven Sulfidsäuren. Lund 1924. pp. 134. *M*. 4. (*Recd.* 31/3/25.)

FOURNEAU, ERNEST. Organic medicaments and their preparation. Authorised translation by WILLIAM ARTHUR SILVESTER. London 1925. pp. x + 262. ill. 15*s*. net. (*Recd.* 17/3/25.)

GOOCH, FRANK AUSTIN, and BROWNING, PHILIP EMBURY. Outlines of qualitative chemical analysis. 5th edition. New York 1924. pp. viii + 184. ill. 7*s*. 6*d*. net. (*Recd.* 25/3/25.)

HODKIN, FREDERICK WILLIAM, and COUSEN, ARNOLD. A textbook of glass technology. London 1925. pp. xxiv + 552. ill. 42*s*. net. (*Recd.* 17/3/25.)

HOFMAN, HEINRICH OSCAR. Metallurgy of copper. 2nd edition. Revised by CARLE R. HAYWARD. New York 1924. pp. xiv + 420. ill. 25*s*. net. (*Recd.* 25/3/25.)

LAMBERT, THOMAS. Bone products and manures: a treatise on the manufacture of fat, glue, animal charcoal, size, gelatin, and manures. 3rd edition, revised and enlarged by HERBERT BIRTWHISTLE STOCKS. London 1925. pp. viii + 284. ill. 10*s*. 6*d*. net. (*Recd.* 25/3/25.)

LOEB, JACQUES. Regeneration from a physico-chemical viewpoint. New York 1924. pp. xii + 144. ill. 10*s*. net. (*Recd* 17/3/25.)

LUCAS, ALFRED. Antiques: their restoration and preservation. London 1924. pp. viii + 136. 6*s*. net. (*Recd*. 25/3/25.)

NUGEY, A. L. Oil refinery specifications. Easton, Pa. 1924. pp. x + 210. ill. 25*s*. net. (*Recd*. 17/3/25.)

PARTINGTON, JAMES RIDDICK. A text-book of inorganic chemistry for university students. 2nd edition. London 1925. pp. xii + 1068. ill. 25*s*. net. (*Recd*. 25/3/25.)

PULSIFER, H. B. Structural metallography: an illustrated text with laboratory directions for students. Easton, Pa. 1924. pp. viii + 210. ill. 17*s*. 6*d*. net. (*Recd*. 17/3/25.)

RECTOR, THOMAS M. Scientific preservation of food. New York 1925. pp. xii + 214. 10*s*. net. (*Recd*. 17/3/25.)

REID, EBENEZER EMMET. Introduction to organic research. [New York 1924.] pp. viii + 344. 24*s*. net. (*Recd*. 6/4/25.)

RINNE, FRIEDRICH. Crystals and the fine-structure of matter. Translated by WALTER S. STILES. London 1924. pp. x + 196. ill. 10*s*. 6*d*. net. (*Recd*. 17/3/25.)

STILLMAN, JOHN MAXSON. The story of early chemistry. New York 1924. pp. xiv + 566. 18*s*. net. (*Recd*. 25/3/25.)

THRESH, JOHN CLOUGH, and BEALE, JOHN FOSTER. The examination of waters and water supplies. 3rd edition. London 1925. pp. xiv + 590. ill. 25*s*. net. (*Recd*. 17/3/25.)

III. *Pamphlets.*

BOARD OF AGRICULTURE AND FISHERIES. Statutory rules and orders, 1908, No. 964. Adulterations. Fertilisers and feeding stuffs. The fertilisers and feeding stuffs (methods of analysis) regulations, 1908. London 1908. pp. 9.

GRÜN, RICHARD. Die Einwirkung des Sulfidgehaltes auf die Eigenschaften von Hochofenschlacken und Hüttenzementen. (From *Stahl und Eisen*, 1925, 45.)

HAROLD, CHARLES HENRY HASLER, and WARD, ARTHUR ROKEBY. Report on experimental work carried out at the Army School of Hygiene to demonstrate that chlorine gas in association with ammonia gas is a more efficient sterilizer of water than chlorine gas used alone or chloros or bleaching powder. (From the *J. Roy. Army Med. Corps*, 1924, 41.)

JOSEPH, ALFRED FRANCIS, MARTIN, FREDERICK JOHN, and HANCOCK, J. S. The electrical method for determining soil alkali. (From the *Cairo Sci. J.*, 1924, 12.)

TECHNOLOGY DEPT.

PUBLIC LIBRARY
JUN 18 1925
DETROIT

PROCEEDINGS

OF THE

CHEMICAL SOCIETY.

Ordinary Scientific Meeting, Thursday, May 7th, 1925, at 8 p.m., Professor J. C. PHILIP, O.B.E., D.Sc., F.R.S., Vice-President, in the Chair.

The CHAIRMAN referred to the loss sustained by the Society, through death, of the following Fellows:

	Elected.	Died.
Edward Wightman Bell	June 20th, 1889.	Jan. 29th.
Arthur Boake	Dec. 2nd, 1875.	April 12th.
William Dugdale Harland	Feb. 7th, 1878.	April 23rd.
Sir David L. Salomons	May 4th, 1876.	April 19th.
George Young	Dec. 4th, 1890.	April 3rd.

The CHAIRMAN announced:

1. That the following address of congratulation had been sealed and would be presented to the Royal University of Pavia on the occasion of the Centenary Celebrations of that University which were being held from May 20th to 22nd, 1925:

To the Rector, Senate, Professors, and Alumni of the Royal University of Pavia from The Chemical Society.

The Chemical Society sends cordial greetings and felicitations to the illustrious University of Pavia on the completion of no less than eleven centuries of high service to mankind.

As representatives of a Science rooted in antiquity, we gratefully acknowledge the debt we owe to the members of your University who throughout the ages preserved ancient learning and extended the boundaries of knowledge, giving to us our heritage. We do not forget that the celebrated Lanfranc, one of your earliest and greatest teachers, carried the torch of learning to our country as Archbishop of Canterbury. Since her foundation the University of Pavia has given to the world many men distinguished for learning

and science—Alexander Volta, who pointed out new paths which now we follow, Camillus Golgi, the great neurologist, and many others whose genius we gratefully acknowledge.

We join with those who will be hastening from all parts of the world to lay before you their tribute of praise, and we hope that in the future renewed prosperity will be added to your illustrious past.

Signed on behalf of the Chemical Society.

ARTHUR W. CROSSLEY, *President.*
JOCELYN THORPE, *Treasurer.*
(L.S.) T. SLATER PRICE, C. S. GIBSON, } *Secretaries.*
F. G. DONNAN, *Foreign Secretary.*

Sealed this Seventh day of May, One Thousand Nine Hundred and Twenty Five.

2. That a copy of the works of the late Walthère Spring had been presented to the Library by the Belgian Chemical Society, and that this volume can be purchased from Monsieur J. Wauters, Secrétaire, Société Chimique de Belgique, 83, Rue Souveraine, Brussels, price 40 francs, post free.

The following were formally admitted Fellows of the Chemical Society: Alan D. Whitehead, Stuart R. Parsons, Leslie S. Theobald, J. F. J. Rule, and A. H. B. Bishop.

Certificates were read for the first time in favour of:

Maung Hla Baw, R-1, 64th Street, Danneedaw, Rangoon.
Joseph John Blackie, c/o Messrs. Duncan, Flockhart & Co., 104, Holyrood Road, Edinburgh.
Samuel Cyril Blacktin, M.Sc., 173, Ecclesall Road South, Sheffield.
Nirmal Boran Brohmachary, B.Sc., Ghugudanga-Post, 24, Porganas, Calcutta.
Gertrude Margaret Bullick, B.Sc., 43, Belsize Park, Hampstead, N.W. 3.
Ralph Edgar Cable, Queen's Gardens, Hong Kong.
Leslie Marshall Clark, B.A., Ph.D., A.I.C., 38, Park Road, Hampton Wick.
Clive Kear Colwell, B.A., Ormesty, Great North Road, N. 2.
Jan Coops, 25, Sireelinckplein, The Hague, Holland.
William George Corderoy, B.Sc., 35, Century Road, Walthamstow, E. 17.
Oswald Pilkington Cronshaw, 141, Blackburn Road, Great Harwood, Blackburn.
John Alexander Currie, B.A., B.Sc., 44, Phillimore Gardens, W. 8.
Thomas Dillon, University College, Galway.
Octave Charles Marie Dony, 30, Rue Émile Banning, Brussels.
William Edward Gibbs, D.Sc., 4, Stanley Villas, Runcorn.
Ernest Hartshorne, B.Sc.Tech., 12, Muriel Street, Broughton.
Arthur Harvey, 12, Chaldon Road, Fulham, S.W. 6.
Charles Richard Hennings, Ph.D., 19, St. Dunstan's Hill, E.C. 3.
Noel Waterman Vere Jones, Eastnook, Pakefield, Lowestoft.
Frank William Linch, M.Sc., F.I.C., 89, Hazelbottom Road, Cheetham, Manchester.

Charles Lipshaw, 48, Lower Broughton Road, Salford.
James Arthur Prescott, The University, Adelaide.
Malik Karam Singh, B.Sc., Rawalpindi City, India.
Norman Heath Smith, B.Sc., Anglo-Persian Oil Co., Ltd., Abadan.
John Thurgood, B.Sc., Roseleigh, Elmwood Avenue, Harrow.
Shojiro Uchida, 12, Shinryudo-Machi, Azabu-Ku, Tokio.
John Henry Walker, A.I.C., Gourepore Works, Naihati, E.B.Ry., Bengal.

Messrs. H. Burton and J. N. Sugden were elected Scrutators, and a ballot for the election of Fellows was held, the following subsequently being declared elected as Fellows:

James Munsie Bell.
Niels Janniksen Bjerrum.
Archibald Beresford Blunsden.
Geoffrey Alger Blyde.
Thomas Henry Bowles.
William Harrison Brindley, M.C., M.A., M.Sc.Tech., A.I.C.
James Lindsay Buchan, B.Sc.
Frank Henry Charles Bull, B.Sc., A.I.C.
John Alfred Valentine Butler, M.Sc.
Annie Lavinia Byford, B.Sc.
John Cameron.
James Herbert Clegg.
Horace Cecil Cockroft, B.Sc., A.I.C.
Francis Xavier Coyne.
James Craik, M.A., B.Sc., Ph.D.
Herbert Greetham Dane, M.Sc.
Harry Dean.
Margaret Stedman Leonora Dixon.
Robin George Westbury Farnell, A.R.C.S., A.I.C.
Irvine John Faulkner.
Thomas Flett, B.Sc., A.I.C.
Thomas James Elijah Gardner.
Richard Randolph Garran, B.Sc.
John Charles Giblin, B.Sc., A.I.C.
Helen Simpson Gilchrist, B.Sc., Ph.D.
Isabel Hodgson Hadfield, M.Sc.
James Francis Halpin, F.I.C.
Donald Hanson.
Thomas Haworth.
John Stanley Heaton, B.Sc., Ph.D.
John Cyril Hensman, M.A., A.I.C.
Joseph Hill.
Frederick Denison Maurice Hocking, M.Sc., A.I.C.
Jim Hoyle.
Horace William Hughes, B.Sc.
Joseph Taylor Jackson, B.Sc.
David Bret Jehu, M.Sc., A.I.C.
William Jobson.
Clifford Merton Jones, B.Sc.
Thomas William Jones, B.Sc.
John Keane, M.Sc., Ph.D.
Alfred Lucy.
Ernest Edward Mabbott, B.Sc.
David McDowall.
Gordon McIntyre, B.Sc., Ch.E.
Richard H. F. Manske, M.Sc.
Hugh Clouston Moir, B.Sc., A.I.C.
Richard Alan Morton, B.Sc., Ph.D., A.I.C.
Frederick Wilson Moulds.
Andrew Joseph Myles.
Alfred William Nash, B.Sc.
Henry Bowen Oakley, M.Sc., A.R.C.S.
Edgar Kent Palmer, B.Sc.Tech.
David Pomerantz.
Harry Rawlings, B.Sc.
John Brent Reed, B.Sc., A.I.C.
William George Rhodes.
George James Robertson, M.A., B.Sc., Ph.D.
Robert Joseph Salmon, M.Sc.
Prem Chandra Sharma, M.Sc.
John Robert Shepherd, M.Sc., A.I.C.
Alan Lawrence Smith, M.Sc.
Karl Thomas, M.D.
George Thorn, B.Sc.
Leonard William Ernest Townsend.
Leslie John Walker.
Thomas Kennedy Walker, M.Sc., Ph.D., F.I.C.
William Alexander Waters, B.A.
James Bernard Watson.
Ernest Swann Watts.
Archibald Steele Whamond.
Edwin John Woodcock.
John Stanley Worthington.

The following papers were read :

"The tautomerism of dyads. Part III. The effect of the triple linking on the reactivity of neighbouring atoms." By Mrs. E. H. INGOLD.

"The rotatory dispersive power of organic compounds. Part XVI. Halogen-derivatives of camphor." By J. O. CUTTER, H. BURGESS, and T. M. LOWRY.

"The isomerism of the oximes. Part XXII. The configuration of the aldoximes." By O. L. BRADY and G. BISHOP.

"The parachor and chemical constitution. Part I. Polar and non-polar valencies in unsaturated compounds." By S. SUGDEN, J. B. READ, and H. WILKINS.

"The tautomerism of dyads. Part IV. New evidence of the tautomeric mobility of oximes." By J. P. GRIFFITHS and C. K. INGOLD.

Ordinary Scientific Meeting, Thursday, May 21st, 1925, at 8 p.m., Professor W. P. WYNNE, D.Sc., F.R.S., Vice-President, in the Chair.

The CHAIRMAN referred to the loss sustained by the Society, through death, of the following :

	Elected.	Died.
Albin Haller (Honorary Fellow)	Feb. 6th, 1908.	May 1st.
Samuel Henry Davies	Feb. 15th, 1894.	May 9th.
John Mylne Mullaly	May 4th, 1922.	May 4th.

It was also announced that the Celebration of the Centenary of Faraday's discovery of benzene, which is being arranged by the Royal Institution in association with the Chemical Society, the Society of Chemical Industry, and the Association of British Chemical Manufacturers, will take place at the Royal Institution on Tuesday, June 16th, 1925. In the morning, at eleven o'clock, there will be a reception by the Duke of Northumberland of English and foreign delegates, and several short addresses will be delivered commemorative of Faraday's chemical work. In the evening, a banquet will be held in the Goldsmiths' Hall, the price of the tickets being £2 2*s*. each, including wine. Application for tickets for the reception and for the banquet, which are limited in number, should be made to the Secretary, The Royal Institution, Albemarle Street, W. 1.

Mr. H. G. Dane was formally admitted a Fellow of the Chemical Society.

Certificates were read for the first time in favour of :

Marion Alice Battie, B.Sc., A.I.C., The Orchard, Ivy Lane, Woking.
William Ambler Berry, B.Sc., 19, Blakeney Road, Sheffield.

Thomas Anthony Canning, Crindau Gas Works, Newport, Mon.
John Carroll Culbert, 172, North Road, Belfast.
Alexander John Dey, F.R.S.E., Rothiemay, Corstorphine, Edinburgh.
Stanley James Featherston, 33, Belmont Road, Beckenham.
James Hindle, 4, Plane Street, Blackburn.
Thomas Moore, B.Sc., 8, Cyprus Avenue, Belfast.
Alexander John Morrison, Testing Branch, Public Works Department, Sydney, N.S.W.
Frank Richard Morrison, Brae Street, Waverley, Sydney, N.S.W.
Ernest Charles Padgham, 30, Churchill Road, N.W. 2.
John Monteath Robertson, B.Sc., A.I.C., The Chemistry Department, The University, Glasgow.
Ernest Henry Warren, B.A., 1, Chamber's Lane, Willesden Green, N.W. 10.
James Watt, F.R.S.E., Craiglockhart House, Slateford, Edinburgh.
William John Willis, Hazel Mount, Carnforth.

The following Certificates have been authorised by the Council for presentation to ballot under Bye-Law I (2):

Howard Ecker, 1510, Dana Avenue, Cincinnati, Ohio, U.S.A.
William Beesley, Binnyston Gardens, Bangalore, India.
Alexander Smith, P.O. Box 103, Nairobi, Kenya Colony.

The following papers were read:

"The rotatory dispersion of derivatives of tartaric acid. Part II. Acetyl derivatives." By P. C. Austin and J. R. Park.

"The stability of additive compounds between esters and acids." By J. Kendall and J. E. Booge.

"Additive compounds in the ternary system, acid–ester–water." By J. Kendall and C. V. King.

"A spectroscopic study of the combustion of phosphorus trioxide and of phosphine." By H. J. Emeléus.

"The nature of the alternating effect in carbon chains. Part III. A comparative study of the directive efficiencies of oxygen and nitrogen atoms in aromatic substitution." By E. L. Holmes and C. K. Ingold.

LIST OF FELLOWS, 1925.

It has been decided to print the List of Fellows for 1925 and to supply the List to those Fellows who make application to the Assistant Secretary by the 31st July, 1925.

BERICHTE, 1915 to 1924.

Sets of the Berichte from 1915 to 1924 (10 years) are now offered to Fellows of the Society at £22, carriage extra. Application should be made to Mr. S. E. Carr.

List of Papers, or Abstracts thereof, received between April 3rd and May 21st, 1925. (This List does not include the titles of papers which have been read at a Scientific Meeting, or which have appeared in the Journal.)

"The ionisation of aromatic nitro-compounds in liquid ammonia." By M. J. FIELD, W. E. GARNER, and C. C. SMITH.

"α-Acenaphthoquinoline." By J. STEWART.

"Alcohols of the hydroaromatic and terpene series. Part IV. α- and β-Fenchyl alcohols and some esters derived therefrom." By J. KENYON and H. E. M. PRISTON.

"Perkin's reaction." By T. HOPKINS.

"Action of zinc alkyl halides on nitric esters." By T. HOPKINS.

"Polynuclear heterocyclic aromatic types. Part II. Some anhydronium bases." By J. W. ARMIT and R. ROBINSON.

"β-Piperonylpropionitrile and some derived substances." By W. BAKER and R. ROBINSON.

"The melting points of benzene derivatives." By T. BEACALL.

"Nitrosation of phenols. Part II. 3-Bromo-, 2-bromo-, 3-iodo-, and 2-iodo-phenols, with evidence favouring the nitroso form for 4-nitroso phenol." By H. H. HODGSON and F. H. MOORE.

"The Kekulé formula for benzene and the existence of isomeric ortho disubstitution products." By H. H. HODGSON and J. H. WILSON.

"A new method of diagnosing potential optical activity. Part I. The optical activity of chlorobromomethanesulphonic acid." By J. READ and A. M. MCMATH.

"The carboxy-phenyl camphoramic acids." By M. SINGH and R. SINGH.

"A simplified method of micro-combustion: the micro-Dennstedt method." By C. FUNK and S. KON.

"Interfacial tension." By J. R. POUND.

"Low temperature oxidation at charcoal surfaces. Part I. The behaviour of charcoal in the absence of promoters." By E. K. RIDEAL and W. M. WRIGHT.

"Osmotic pressure by the solubility method in concentrated solutions." By M. P. APPLEBEY and P. G. DAVIES.

"Synthetical experiments in the naphthyridine groups." By J. M. GULLAND and R. ROBINSON.

"Chlorobenzothiazole dibromide." By R. F. HUNTER.

"Note on the action of sodium of chlorobenzothiazole." By R. F. HUNTER.

"Investigations into the analytical chemistry of tantalum, niobium, and their mineral associates. Part III. A new method for

the separation of tantalum from niobium. Part IV. The detection and determination of tantalum in niobium compounds." By A. R. POWELL and W. R. SCHOELLER.

"The conditions underlying the formation of unsaturated and cyclic compounds from halogenated open-chain derivatives. Part VII. The influence of the phenyl group on the formation of the *cyclo*propene ring." By W. HAERDI and J. F. THORPE.

"Rapid determination of copper and iron in mixtures of their salts." By A. S. RUSSELL.

"The bromination of 4′-amino-1-phenyl-5-methyl benzothiazole and of 1 : 1-bisbenzothiazole." By R. F. HUNTER.

"Amino benzothiazoles. Part I. 1-Phenylamino benzothiazole and its homologues." By R. F. HUNTER.

"The directing influence of the methane sulphonyl group." By R. F. TWIST and S. SMILES.

"The dissociation constants of selenious acid." By J. S. WILLCOX and E. B. R. PRIDEAUX.

"The velocity of benzylation of certain amines. Part II." By D. H. PEACOCK.

"Measurements of energy absorption of certain photo-chemical reactions with iodine." By B. K. MUKERJI and N. DHAR.

"The action of hydrogen peroxide on limonene." By J. SWORD.

"Synthetical experiments in the *iso*quinoline group. Part I." By R. D. HAWORTH and W. H. PERKIN.

"Synthetical experiments in the *iso*quinoline group. Part II." By R. D. HAWORTH, W. H. PERKIN, and J. RANKIN.

"Synthetical experiments in the *iso*quinoline group. Part III." By R. D. HAWORTH and W. H. PERKIN.

"Synthetical experiments in the *iso*quinoline group. Part IV." By R. D. HAWORTH and W. H. PERKIN.

"Synthesis of ψ-protoberberine and ψ-protopapaverine." By J. S. BUCK, W. H. PERKIN, and T. S. STEVENS.

"Note on a laboratory method of preparing *p*-benzoquinone." By R. CRAVEN and W. A. T. DUNCAN.

"Hydroxybenzils." By J. T. MARSH and H. STEPHEN.

"Researches on sulphuryl chloride. Part III. Influence of catalysts on the chlorination of toluene." By O. SILBERRAD, C. A. SILBERRAD, and B. PARKE.

"The adsorption of water from the gas phase on plane surfaces of glass and platinum." By I. R. MCHAFFIE and S. LENHER.

"The action of phosphorus pentachloride on 2-*iso*nitroso-1-hydrindones." By R. D. HAWORTH and H. S. PINK.

"Oxidation products of oleic acid. Part I. Conversion of oleic acid into dihydroxystearic acid and the determination of the

higher saturated acids in mixed acids from natural sources." By A. LAPWORTH and E. N. MOTTRAM.

"The spatial structure of *cyclo*paraffins. Part I. A new aspect of Mohr's theory and the isomerism of decahydronaphthalene." By W. A. WIGHTMAN.

"The absorption spectra of the vapours of anthracene and anthraquinone, phenanthrene, and phenanthraquinone, and other quinones." By J. E. PURVIS.

"Investigations on the dependence of rotatory power on chemical constitution. Part XXVII. Some esters of *p*-toluene-sulphonic and -sulphinic acids." By H. PHILLIPS.

"Oxidations in turpentine and olive oil." By E. WALKER.

"Colour and molecular geometry. Part IV. Explanation of the colours of the cyanine dyes." By J. MOIR.

"The surface tensions of aqueous phenol solutions. Part II. Activity and surface tension." By A. K. GOARD and E. K. RIDEAL.

"Triad groups in complexes of octahedral symmetry." By J. D. M. Smith.

"*Iso*quinoline derivatives. Part IX. Preparation and reduction of *iso*quinoline and its derivatives." By R. FORSYTH, C. I. KELLY, and F. L. PYMAN.

"The nitration of *m*-meconine." By J. N. RÂY and R. ROBINSON.

"Chenopodium oil. Part II. The hydrocarbon fraction." By T. A. HENRY and H. PAGET.

"The amino-γ-pyridones." By W. H. CROWE.

"Studies of the glucosides. Part III. The synthesis of thioindican." By J. CRAIK and A. K. MACBETH.

"The reduction of the bromoanthraquinones." By E. DE B. BARNETT and J. W. COOK.

"The chlorination of acetanilide and the chloroamine-chloroanilide transformation." By F. G. SOPER.

"The thermal decomposition of ozone." By R. O. GRIFFITH and A. MCKEOWN.

"Studies of electrolytic polarisation. Part III. The diffusion layer." By S. GLASSTONE.

"Theories of polar and non-polar free affinities. A practical and theoretical reply to some recent criticisms and comparisons." By G. N. BURKHARDT and A. LAPWORTH.

"The reaction between sodium hypobromite and urea." By M. B. DONALD.

"Echitamine." By J. A. GOODSON and T. A. HENRY.

"The preparation of phthalamic acids and their conversion into anthrenilic acids." By E. CHAPMAN and H. STEPHEN.

"An *X*-ray examination of maleic and fumaric acid." By K. YARDLEY.

"The estimation of arsenic in organic compounds." By G. NEWBERY.

"The bromination of acyl derivatives of phenylhydrazine: the preparation of 2:4-dibromophenylhydrazine." By J. E. HUMPHRIES and R. EVANS.

"The system chromium trioxide–boric acid–water." By L. F. GILBERT.

CERTIFICATES OF CANDIDATES FOR ELECTION AT THE BALLOT TO BE HELD AT THE ORDINARY SCIENTIFIC MEETING ON THURSDAY, JUNE 18TH, 1925.

BATTIE, MARION ALICE, The Orchard, Ivy Lane, Woking, Surrey. British. Post-graduate student. B.Sc. Honours (Chemistry), Class II. Associate of the Institute of Chemistry. (*Signed by*) T. S. Moore, Mary Boyle, S. Smiles.

BAW, MAUNG HLA, R-1, 64th Street, Danneedaw, Rangoon. Burmese. Analytical Chemist, Messrs. E. M. D'Souza & Co., Rangoon, and Science Master, St. John's College, Rangoon. Passed the Intermediate Examination in Science of the Calcutta University in 1916, taking Chemistry, Physics, and Mathematics. Process Chemist (1916 to 1921) at the Seikkyi Refinery of Messrs. The Indo Burma Petroleum Co., Ltd.; and Process Chemist (1922) in the acid works of The Burma Chemical Industries, Ltd. Process Chemist (1923) with The Rangoon Pharmaceutical and Chemical Works, Rangoon. Since 1924 chemist in charge of the analytical laboratory of Messrs. E. M. D'Souza & Co., Rangoon, and Science Master, St. John's College, Rangoon. (*Signed by*) Maung Tun Tin, Maung Ba, Maung Ba San.

BERRY, WILLIAM AMBLER, 19, Blakeney Rd., Sheffield. British. Research Student at University of Sheffield. B.Sc., Hons. Chem., 1924. Joint author with Dr. G. M. Bennett of the Note, *J.C.S.*, 1925, **127**, 910. (*Signed by*) W. P. Wynne, T. M. Lowry, G. M. Bennett, F. G. Tryhorn.

BLACKIE, JOSEPH JOHN, c/o Duncan, Flockhart & Co., 104, Holyrood Road, Edinburgh. British. Pharmaceutical Chemist. Minor and Major Examination, Pharmaceutical Society of Great Britain. Laboratory Manager of Messrs. Duncan, Flockhart & Co., Manufacturing Chemists, Edinburgh. Examiner in Chemistry of the Pharmaceutical Society of Great Britain. (*Signed by*) George Barger, William Duncan, Eric Knott.

BLACKTIN, SAMUEL CYRIL, 173, Ecclesall Road South, Sheffield. British. Research Assistant. (Junior Assistant, Safety in Mines Research Laboratories, Badger Lane, Sheffield.) M.Sc. (Sheffield). (*Signed by*) W. P. Wynne, F. G. Tryhorn, J. Kenner.

BLIGH, NEVILLE MELTON, 67, Castle Road, Bedford. British. Science Master. A.R.C.S. (Chemistry), London, 1921. A.I.C., 1923. Formerly Senior Science Master, Wimborne Grammar School, Dorset. At present (Temporary) Senior Science Master, Stevenage Grammar School, Herts. *Signed by*) H. B. Baker, James C. Philip, M. A. Whiteley.

BORLAND, HUGH ALEXANDER MILLAR, 14, Cotham Road, Bristol. British.

Teacher of Chemistry. A.R.C.S. (Lond.). M.Sc. (Bristol). Lecturer on Chemistry 1896 to present date (Secondary and Technical). Lecturer on Applied Chem., University of Bristol, 1910–19. (*Signed by*) Arthur Marsden, F. Francis, J. W. McBain, F. W. Rixon.

BROHMACHARY, NIRMAL BORAN, Ghugudanga-Post 24 Porganas, Calcutta, India. Hindu (Indian). Chemist to Messrs. B. K. Paul's Chemical and Pharmaceutical Works, Dum Dum, Calcutta. Passed the B.Sc. examination of the Calcutta University in 1920. Worked as an analytical and manufacturing chemist. Assistant of Messrs. Smith, Stanistreet & Co. for 2 years, and at present working as the Chemist for Messrs. B. K. Paul & Co. (for last three years). (*Signed by*) Dhirendra Nath Mukerji, Sudhindranarayan Ray, R. L. Jenks.

BULLICK, GERTRUDE MARGARET, 43, Belsize Park, Hampstead, N.W. 3. British. Hons. Student in Chemistry, Bedford College, Univ. of London. Graduate of Lond. Univ. B.Sc., June, 1924. (*Signed by*) Holland Crompton, J. F. Spencer, M. S. Crewdson, J. Stewart.

CABLE, RALPH EDGAR, Queen's Gardens, Hong Kong. English. Apothecary, Medical Department, Hong Kong. Lecturer (part time), University of Hong Kong, Med. Faculty, Practical Pharmacy. (*Signed by*) R. W. E. Stickings, A. J. Ewins, G. Newbery, P. Blenkinsop.

CANNING, THOMAS ANTHONY, Crindau Gas Works, Newport, Mon. English. Gas and Chemical Engineer, now General Assistant Technical Engineer to the Newport (Mon.) Gas Company. Certificates in Chemistry granted by Institution of Gas Engineers. Engaged 7 years in Gas Manufacture and allied work and the chemistry of same. I desire to become a Fellow of the Chemical Society in order to keep in touch with current chemical literature. (*Signed by*) Geo. R. Thompson, H. E. Cox, J. H. Canning.

CLARK, LESLIE MARSHALL, 38, Park Rd., Hampton Wick, Kingston-on-Thames. English. Chemist, National Physical Laboratory, Teddington. Late Scholar and Research Scholar, Sidney Sussex College, Cambridge. Late Assistant Demonstrator, Cambridge University Chemical Laboratory. B.A., Cantab. Ph.D., London. Associate of Institute of Chemistry. Joint author of papers in *J.C.S.*, 1923, **123**, 2353, and 2362. (*Signed by*) M. Johnson, Guy Barr, Percy G. Ward.

COLWELL, CLIVE KEAR, Ormesty, Great North Road, N. 2. English. Analytical and Consulting Chemist. B.A., Cantab. Paper in conjunction with A. J. Berry, M.A., in Chemical News. (*Signed by*) A. H. M. Muter, Cyril Dickinson, J. Kear Colwell.

COOPS, JAN, den Haag, 25 Sireelinckplein. Dutchman. Dr. ir. Delft. Assistant, Commercial University, Rotterdam. Author of some papers in *Rec. trav. chim.*, 1920, 1921, 1922, 1923, 1924, 1925, *Chem. Weekblad*, and *Kon. Akad. van Weten. Amsterdam*, etc. (*Signed by*) H. J. Backer, Ernest Cohen, A. Smits.

CORDEROY, WILLIAM GEORGE, 35, Century Rd., Walthamstow, E. 17. British. Student for Teaching Profession (entering profession next Sept.). 1st Honours (Chem.), B.Sc. (Lond.). [Studied at East London College, 1921–24.] (*Signed by*) J. R. Partington, E. E. Turner, D. C. Jones, Elwyn Roberts.

CRONSHAW, OSWALD PILKINGTON, 141, Blackburn Road, Great Harwood, near Blackburn. British. Chemist and Assistant Gas Engineer, Accrington District Gas and Water Board. For past 3 years Chief Chemist to the Accrington District Gas and Water Board, having full chemical control of all gas manufacturing operations, the manufacture of sulphate of ammonia,

etc. Hold 1st Class Certificates Gas Manufacture (City and Guilds). Distinction in Inorganic Chemistry (Lanc. and Cheshire Inst.). 1st Class Certificate Inorganic and Organic Chemistry at Blackburn College of Technology. Associate Member of Institution of Gas Engineers. (*Signed by*) James Booth, John S. Morrison, Robert C. McDowall.

CULBERT, JOHN CARROLL, 172, North Road, Belfast. British. Pharmacist. Pharmaceutical Chemist, Member of Pharm. Society of Ireland, ex-Member Council of Pharm. Society of Ireland. (*Signed by*) George Scott Robertson, W. H. Gibson, Henry Wren.

CURRIE, JOHN ALEXANDER, 44, Phillimore Gardens, London, W. 8. British. Student. Honours B.A., Chemistry, and B.Sc., Oxford. Now researching under Professor Donnan at University College, London. (*Signed by*) F. G. Donnan, W. E. Garner, C. W. Bonniksen.

DEY, ALEXANDER JOHN, Rothiemay, Corstorphine, Edinburgh. British. Manufacturing Chemist. Managing Director, T. and H. Smith, Ltd., Manufacturing Chemists. F.R.S.E. (*Signed by*) James Walker, Alex. C. Cumming, Alexander Lauder.

DILLON, THOMAS, University College, Galway. Irish. Professor of Chemistry, University College, Galway. Papers on Waxes, *Proc. R.D.S.*, 1909, vol. 12, No. 20; vol. 15, No. 10; *Proc. R.I.A.*, vol. 29, sec. B, No. 8. On separation of Isotopes of Lead, *Proc. R.D.S.*, 1922, vol. 17, p. 53. (*Signed by*) A. G. G. Leonard, Sydney Young, Emil A. Werner, A. O'Farrelly.

DONY, OCTAVE CHARLES MARIE, Bruxelles, 30 Rue Emile Banning. Belge. Professeur à l'Université de Bruxelles (Faculté de Science appliquées). Membre de l'Académie royale de Belgique. (*Signed by*) C. S. Gibson, Eric K. Rideal, T. M. Lowry, W. J. Pope, Henry E. Armstrong.

FEATHERSTON, STANLEY JAMES, 33, Belmont Rd., Beckenham, Kent. British. Analytical Chemist in Laboratory of Manufacturing Chemists, namely, Messrs. Hopkins & Williams, 16–17, Cross St., E.C. Honours Student in Chem. at Birkbeck Coll., University of London. 5 Years analytical work with manufacturing chemists. (*Signed by*) George Senter, F. Barrow, Samuel Sugden.

GASKILL, MALCOLM SINCLAIR, 3, Buckingham Rd., Hilton Park, Prestwich, Manchester. British. Chemical Engineer, West's Gas Improvement Co., Ltd., Manchester. Associate of the Manchester College of Technology. Chemist and Assistant Manager, Messrs. Hardman & Holden, Ltd., Chemical Manufacturers, Clayton. Present position, as above. Desirous of keeping in touch with modern developments of pure and applied chemistry. (*Signed by*) Harold G. Colman, William Buckley, Joseph Poulson.

GIBBS, WILLIAM EDWARD, 4, Stanley Villas, Runcorn. British. Chief Chemist to the Salt Union, Ltd. D.Sc. (Liverpool). Author of books: "Clouds and Smokes: The Properties of Disperse Systems in Gases," "The Dust Hazard in Industry." *Journ. Inst. Metals*, XV (1916), 1, pp. 41–191; *J.S.C.I.*, XLI, pp. 189–196; *Faraday Soc.*, XI, 1915, pp. 295–297, etc. (*Signed by*) W. C. McC. Lewis, I. M. Heilbron, E. C. C. Baly.

HAMER, NORMAN, "Ash Mount," Holcombe, nr. Manchester. British. Research and Analytical Chemist in Calico Printing, Dyeing, and Bleaching Works. As a student I have gained the Associateship of the Manchester College of Technology (Assoc. M.C.T.), whilst my duties as chemist cover a fairly wide field of analytical work, together with the investigation of the many and varied problems which are continually arising in the works. (*Signed by*) Arthur M. Morley, John K. Wood, Frank Lee Pyman.

HARTSHORNE, ERNEST, 12, Muriel St., Broughton, Manchester. British.

Chemist in the Laboratory of Dr. A. K. Miller, F.C.S. Degree of Bachelor of Technical Science in General Chemical Technology, Victoria University, Manchester. (*Signed by*) Alex. K. Miller, Frank Lee Pyman, John K. Wood.

HARVEY, ARTHUR, 12, Chaldon Road, Fulham, S.W. 6. British. Chemist. Formerly Agricultural Analyst, South Eastern Agricultural College (Univ. Lond.), Wye, Kent. Formerly lecturer on Applied Chemistry, Leathersellers College, London. Author of "Practical Leather Chemistry" and "Tanning Material," published by Crosby Lockwood & Son. Also several papers on leather chemistry in *J. Soc. L. Trades Chem.* Editor of Abstracts, *J. Soc. L. Trades Chem.* Member, British Association of Chemists, American Chemical Society, Society of Leather Trades Chemists. (*Signed by*) M. C. Lamb, A. B. Bradley, R. W. West.

HENNINGS, CHARLES RICHARD, 19, St. Dunstan's Hill, London, E.C. 3. German. Consulting Chemist. Qualified Pharmaceutical Chemist. Graduated in Chemistry. Ph.D., Freiburg. Papers as given before when first being admitted. (*Signed by*) Otto Oberländer, George P. Forrester, A. W. Edwards.

HINDLE, JAMES, 4, Plane St., Blackburn, Lancs. British. Student. Have been full-time day student in the Chemistry Dept. Municipal Technical College, Blackburn, for four years and am now preparing for Hons. Chemistry, B.Sc. (Lond.) there. (*Signed by*) G. W. F. Holroyd, Harry G. Leigh, J. T. Holden.

JONES, NOEL WATERMAN VERE, Eastnook, Pakefield, Lowestoft. British. Student. Have been studying Chemistry for five years and wish to keep abreast of modern advances. (*Signed by*) E. de Barry Barnett, James W. Cook, Marcus A. Matthews.

LINCH, FRANK WILLIAM, 89, Hazelbottom Rd., Cheetham, Manchester. British. Research Chemist, British Dyestuffs Corporation. M.Sc., Lond. 1st Hons. Chemistry at B.Sc. F.I.C. Asst. Chief Chemist, H.M. Factory, Queensferry, 1915–1917. Chief Chemist, H.M. Factory, Avonmouth, 1917–1919. 1919 to date, Research Chemist, British Dyestuffs Corp., Blackley, Manchester. Action of sodium hypobromite on carbamide derivs. Part I. 3-Amino-coumarin. Both papers in Trans. 1912. (*Signed by*) G. R. Clemo, Colin H. Lumsden, Anthony J. Hailwood.

LIPSHAW, CHARLES, 48, Lr. Broughton Rd., Salford. British. Chemist to Messrs. Halliday & Co., Ltd., Bankfield Mills, Stockport. 4 years Laboratory Chemist, and Assistant Works Chemist, at Lowerhouse Printworks, Burnley. Student at the Royal Technical College, Salford. Diploma of the College, City and Guilds of London Institute, Final Certificates in Dyeing and Textile Printing. (*Signed by*) S. N. Brown, V. Edge, E. Clark, B. Prentice.

MOORE, THOMAS, 8, Cyprus Avenue, Belfast. British. Student. Graduate of London (with Honours) and of the Queen's University, Belfast. Fifth year research student in Photochemistry. (*Signed by*) Wm. H. McVicker, Joseph K. Marsh, A. W. Stewart, H. Graham.

NIXON, IVOR GRAY, 75, The Vale, Golder's Green, N.W. 11. English. Student. Have studied chemistry for over 6 years and desire to keep abreast of modern developments. (*Signed by*) E. de Barry Barnett, P. C. L. Thorne, James W. Cook.

OCCLESHAW, VINCENT JOSEPH, 22, Bryn Street, Ashton-in-Makerfield, nr. Wigan. British. Lecturer and Demonstrator in Inorganic Chemistry. M.Sc. (Liv.). A.I.C. (*Signed by*) E. C. C. Baly, J. T. Nance, A. O. Jones.

PADGHAM, ERNEST CHARLES, 30, Churchill Road, N.W. 2. British. Research Assistant at the British Museum Laboratory. Trained in Analytical

Chemistry under the late Dr. Ludwig Mond, F.R.S., and the late Dr. B. Mohr, 1891–1896. Assistant at the Davy Faraday Research Laboratory of the Royal Institution, 1896–1918. Research Assistant at The British Museum Laboratory since 1920. (*Signed by*) Alexander Scott, H. J. Plenderleith, John W. Heath.

PRESCOTT, JAMES ARTHUR, The University, Adelaide, South Australia. British (England). Professor of Agricultural Chemistry at the Waite Agricultural Research Institute of the University of Adelaide. Papers on Soil Chemistry in the "Journal of Agricultural Science," VI, 111; VIII, 65, 111, 136; IX, 216; X, 177; XIII, 333; also Bulletins of the Sultanic Agricultural Society, Egypt. Research Scholar, Rothamsted Experimental Station, 1912–1916. Chief Chemist, Sultanic Agric. Soc., Egypt, 1916–1924. Proceedings, vol. 30, No. 123, 1914. (*Signed by*) Edward H. Rennie, E. J. Russell, H. B. Dixon, Arthur Lapworth, Robert Robinson, H. J. Page.

ROBERTSON, JOHN MONTEATH, Nether Fordun, Auchterarder, Perthshire. Scottish. Research Assistant. B.Sc. (Hons. Chem.), Glasgow, 1923. A.I.C., 1924. Strang-Steel Research Scholar, 1923–24. Carnegie Research Scholar, 1924–25. (*Signed by*) S. Horwood Tucker, T. S. Patterson, G. G. Henderson, R. Wright, David T. Gibson.

RUBENSTEIN, LEON, Jesus College, Oxford (Rookwood, 87, Eaton Grove, Swansea). British. Research Student for Doctorate of Philosophy (Oxford University). First Class Honours, Degree of Bachelor of Science (Welsh Univ.). Bachelor of Science (Oxford Univ.). "Substitution in Vicinal Trisubstituted Benzene Derivatives" (November 1923). (*Signed by*) W. H. Perkin, S. G. P. Plant, J. F. S. Stone, R. H. Griffith, R. D. Haworth.

SINGH, MALIK KARAM, Rawalpindi City. Indian (British subject). Paper Expert. I am a B.Sc. (Physics and Chemistry). Was granted a "State Technical Scholarship" by the Govt. of India for the study of the Paper-making industry in Gt. Britain and other Western countries. Before going to England I worked for about twenty months in the Bengal Paper Mills, Raneegunj (near Calcutta), during 1918–20. Joined College of Technology, Manchester, in 1920. During 1920–21 I completed in one year, a two years' course in paper making, and in the final examination I got a 1st class both in the theoretical and practical parts of the subject. I also studied the following subjects: Organic Chemistry, Physical Chemistry, Chemistry of Dyeing, Chemistry of the Colouring Matters, Economics, Chemical Engineering, Heat Engines, and Construction of Works. In 1921–22 (about 15 months) I received practical training in the following three paper mills, in Aberdeen, Scotland, making different classes of paper: (1) The Donside Paper Mills; (2) The Alex Pirie Paper Mills at Stoneywood, and (3) The Mugiemoss Paper Mills at Bucksburn. During 1922–24 I conducted a special research on about a score of Indian raw materials, with a view to ascertain their suitability for making paper. I have paid short visits lasting from one to ten days to about a score of other paper mills and paper mill machinery manufacture workshops. I have seen almost all the paper mills in India. (*Signed by*) John K. Wood, Frank Lee Pyman, F. M. Rowe.

SMITH, NORMAN HEATH, Hillcroft, Spencer Avenue, Leek, Staffs. British. Process Chemist, at present with Messrs. Anglo-Persian Oil Co., Ltd., Abadan, Persia. B.Sc. (Tech.). Post grad. research on vegetable oils; 2½ years with Messrs. The British Aluminium Co., Ltd., as Asst. Chemist, and over 2 years with Messrs. Anglo-Persian Oil Co., Ltd. (*Signed by*) Colin E. Spearing, S. W. Hayter, H. Harper.

STREATHER, ALEC THOMAS, 3, Wellington Road, Watford. British. Works Chemist. B.Sc. (Honours Chemistry), Birmingham, 1922. Associate Institute of Chemistry. (*Signed by*) G. T. Morgan, S. R. Carter, C. E. Wood, F. W. Pinkard.

THURGOOD, JOHN, "Roseleigh," Elmwood Ave., Harrow, Middx. British. Analytical and Research Chemist. Engaged for 4 years in laboratory of Dunlop Rubber Co., Birmingham. Graduated B.Sc. at Birmingham University in 1922. At present engaged as Assistant Chemist to British Oxygen Co., Ltd., N. Wembley. (*Signed by*) G. T. Morgan, C. E. Wood, E. Holmes.

TREW, VIOLET CORONA GWYNNE, 18, Adam Street, Portman Square, W. 1. British. Student at Bedford College (London University). Reading for an Honours Degree in Chemistry. (*Signed by*) J. F. Spencer, H. Crompton, P. V. McKie.

UCHIDA, SHOJIRO, 12, Shinryudo-Machi, Azabu-Ku, Tokio, Japan. Japanese. Research Chemist of the Fuel Research Board of Japan. Undergraduate of Department of Chemistry, College of Technology, University of Tokio, Japan. (*Signed by*) W. A. Batley, V. H. Legg, M. J. Burgess, F. V. Tideswell.

WALKER, JOHN HENRY, A.R.T.C., A.I.C., Gourepore Works, Naihati, E.B. Ry., Bengal, India. Scotch. Chemist and Oil-mill Manager. Student Royal Technical College, Glasgow. Student with late Dr. J. Lewkowitsch. Sundry papers in *Analyst* and in *J.S.C.I.* Chemist and latterly mill-manager, Gourepore Co., Ltd., Linseed Oil. (*Signed by*) G. G. Henderson, Thomas Gray, F. J. Wilson.

WARREN, ERNEST HENRY, 1, Chamber's Lane, Willesden Green, N.W. 10. English. Research Student. B.A., Cantab. (*Signed by*) Robert Robertson, Geo. Stubbs, P. J. Sageman.

WATT, JAMES, Craiglockhart House, Slateford, Edinburgh. British. Writer to the Signet. Chairman of Directors, T. and H. Smith, Ltd., Chemical Manufacturers. F.R.S.E. (*Signed by*) James Walker, Alex. C. Cumming, Alexander Lauder.

WILLIS, WILLIAM JOHN, Hazel Mount, Carnforth, Lancs. English. Chief Valuer to Michael Faraday and Partners, 77, Chancery Lane, W.C. 2. 3 years' Assistant Demonstrator, Inorganic Chemistry, Barrow Technical School. 3 years' Lecturer on Metallurgy and Iron Foundry Practice, Bradford Technical College. 1st Class Honours Inorganic Chemistry, Science and Art Department. 1st Class Honours and Bronze Medal, City and Guilds of London, Iron and Steel Manufacture. 1st Class and Silver Medal, City and Guilds of London, Salt Manufacture. 8 years Analytical Chemist, Barrow Hematite Steel Co., Ltd. 6 years Chief Chemist and Assistant Works Manager, Yorkshire Iron and Coal Co., Ltd. 5 years Chief Valuer to Michael Faraday and Partners, Surveyors and Valuers. (*Signed by*) T. A. Henry, A. E. Bond, Harry W. Dixon.

The following Certificates have been authorised by the Council for presentation to ballot under Bye-Law I (2).

BEESLEY, WILLIAM, Binnyston Gardens, Bangalore City, Mysore, India. British. Works' Chemist. Took course in Bleaching and Dyeing at the Manchester College of Technology. Technological Certificate and Silver Medallist in Dyeing, City and Guilds of London Institute. Six years Chemist Assistant with Messrs. Binny & Co., Ltd. Now Head Chemist, Bangalore Woollen Mills, India. (*Signed by*) E. Knecht.

ECKER, HOWARD, 1510 Dana Ave., Cincinnati, Ohio, U.S.A. American.

Research Director for The R. I. Johnston Paint Co., Cincinnati, Ohio. Graduate student from Ohio Mechanics Institute, Cin., Ohio. 1 year graduate work, Columbia College, N.Y. 6 years teaching at Ohio Mechanics Institute and for 3 years head of the department. Member of the American Chemical Society, Society of Chemical Industry, German Chemical Society. (*Signed by*) John H. Foulger.

SMITH, ALEXANDER, P.O. Box 103, Nairobi, Kenya Colony. Scot. Chemist and Managing Director, A. H. Wardle & Co., Ltd. Lecturer on chemistry for 2 years, School of Mines, South Africa. Pharmaceutical Society, minor certificate. Consulting Chemist to Kenya Marble Quarries. In charge Hygiene Laboratory (Dr. Kochs), Dar-es-Salaam, 12 months. (*Signed by*) G. T. R. Francis.

ADDITIONS TO THE LIBRARY.

I. *Donations.*

ASSOCIATION OF BRITISH CHEMICAL MANUFACTURERS. British chemicals, their manufacturers and uses: being the official directory . . . containing a full list of members, with a classified list of British chemicals and a note of their industrial applications. London 1925. pp. 212. (*Reference.*) 10*s.* 6*d.* net.
From the Publishers: Messrs. Ernest Benn.

INDIAN CHEMICAL SOCIETY. Quarterly Journal. Vol. I, etc. Calcutta 1924 +. (Two copies.) From the Society.

INSTITUT INTERNATIONAL DE CHIMIE SOLVAY. Premier conseil de chimie, tenu à Bruxelles du 21 au 27 Avril 1922. Rapports et discussions . . . sur cinq questions d'actualité. Paris 1925. pp. xvi + 336. ill. (*Reference.*) 30 *fr.* net.
From the Publishers: MM. Gauthier-Villars & Cie.

NAMARI, ICHITARO. The electrolytic separation of magnesium from magnesia. Sakai 1924. pp. iv + 160. ill. (*Recd.* 15/4/25.)
From the Author.

PHILIP, JAMES CHARLES. Physical chemistry: its bearing on biology and medicine. 3rd edition. London 1925. pp. viii + 368. ill. 8*s.* 6*d.* net. (*Recd.* 7/5/25.) From the Author.

RUMBOLD, W. G. Bauxite and aluminium. (Imperial Institute Monograph on Mineral Resources.) London 1925. pp. x + 110. ill. 6*s.* net. (*Recd.* 17/4/25.) From the Director.

SCIENTIFIC WORKER, The, and the B.A.C. Bulletin. Official organ of the National Union of Scientific Workers and the British Association of Chemists. New series. Vol. I, etc. London 1924 +. (*Reference.*)
From the Publishers: The National Union of Scientific Workers.

SPRING, WALTHÈRE. Œuvres completès, publiées par la Société Chimique de Belgique. 2 vols. Bruxelles 1914–1923. pp. iv + 900, iv, 901 to 1860. ill. 40 *fr.* (*Recd.* 9/4/25.)
From the Société Chimique de Belgique.

STAUDINGER, HERMANN. Introduction to qualitative organic analysis. Authorised translation by WALTER THEODORE KARL BRAUNHOLTZ. London 1925. pp. xvi + 112. 6*s*. 6*d*. net. (*Recd.* 8/4/25.) From the Publishers: Messrs. Gurney & Jackson.

TABLES ANNUELLES DE CONSTANTES et données numériques de chimie, de physique et de technologie. Vol. V. 1917–1922. Part i. Paris 1925. pp. xlii + 804. (*Reference.*)
From the Comité International.

THOMS, HERMANN. [Editor.] Handbuch der praktischen und wissenschaftlichen Pharmazie. Vol. III, Part ii. Vol. IV, Part i. Berlin 1925. pp. 289 to 544, 272. ill. *M*. 20. (*Recd.* 15/4/25.)
From the Publishers: Herren Urban & Schwarzenberg.

II. *By Purchase.*

ANDERSON, ROBERT J. The metallurgy of aluminium and aluminium alloys. New York 1925. pp. xxxii + 914. ill. 42*s*. net. (*Recd.* 27/4/25.)

BABBITT, HAROLD E. Sewerage and sewage treatment. 2nd edition. New York 1925. pp. xvi + 516. ill. 25*s*. net. (*Recd.* 13/5/25.)

BRAGG, SIR WILLIAM HENRY, and BRAGG, WILLIAM LAWRENCE. *X*-rays and crystal structure. 5th edition. London 1925. pp. xii + 324. ill. 21*s*. net. (*Recd.* 13/5/25.)

BURRELL, GEORGE A. The recovery of gasoline from natural gas, with a discussion of motor fuels. New York 1925. pp. 600. ill. 35*s*. net. (*Recd.* 13/5/25.)

BURTON, ELI FRANKLIN. The physical properties of colloidal solutions. 2nd edition. London 1921. pp. viii + 222. ill. 12*s*. 6*d*. net. (*Recd.* 21/4/25.)

COFFIGNIER, CHARLES. Colours and varnishes. Translated from the French by A. HARVEY. London 1925. pp. viii + 258. ill. 12*s*. 6*d*. net. (*Recd.* 13/5/25.)

COLLOID SYMPOSIUM MONOGRAPH. Papers presented at the second National Symposium on Colloid Chemistry, June 1924. Edited by HARRY N. HOLMES. New York 1925. pp. viii + 368. ill. 25*s*. net. (*Recd.* 21/4/25.)

GOUGH, HERBERT JOHN. The fatigue of metals. London 1924. pp. xx + 304. ill. 25*s*. net. (*Recd.* 13/5/25.)

HATSCHEK, EMIL. [Editor.] The foundations of colloid chemistry; a selection of early papers bearing on the subject. Edited on behalf of the Colloids Committee of the British Association. London 1925. pp. 174. 18*s*. net. (*Recd.* 13/5/25.)

PROCEEDINGS

OF THE

CHEMICAL SOCIETY.

Ordinary Scientific Meeting, Thursday, June 4th, 1925, at 8 p.m., Dr. ARTHUR W. CROSSLEY, C.M.G., C.B.E., D.Sc., F.R.S., President, in the Chair.

The PRESIDENT referred to the loss sustained by the Society, through death, of Mr. Charles E. Soane, who was elected a Fellow on February 3rd, 1887, and who died on May 17th.

The PRESIDENT announced that the following address of congratulation had been sealed and will be presented on June 16th, 1925, to the Royal Institution on the occasion of the celebration of the Centenary of the discovery of benzene by Michael Faraday:

To the President, Officers and Members of the Royal Institution of Great Britain.

The Chemical Society welcomes the opportunity of associating itself with the Royal Institution in celebrating the centenary of the Discovery of Benzene by Michael Faraday, a discovery which was destined to have such far-reaching effects on the foundation and development of structural organic chemistry and to lead to the establishment of many new and important industries. We remember with pride that in 1868 the Chemical Society instituted a Triennial Lecture to commemorate the work of Faraday, for we recognise in him the pioneer of many of the principles underlying the chemical science of to-day.

We desire to join with the other Learned Societies and Academies of the world in offering our homage to the memory of this great and distinguished man.

Signed on behalf of the Chemical Society,

ARTHUR W. CROSSLEY, *President.*
JOCELYN THORPE, *Treasurer.*
T. SLATER PRICE, } *Secretaries.*
C. S. GIBSON, }
F. G. DONNAN, *Foreign Secretary.*

Sealed in Council this Fourth Day of June, One Thousand Nine Hundred and Twenty Five.

Mr. W. A. Wightman was formally admitted a Fellow of the Chemical Society.

Certificates were read for the first time in favour of:

William Bouch O'Brien Goudielock, 28, Fairfield Lane, Barrow-in-Furness.
Jnanendra Nath Ray, M.Sc., The University, Manchester.
Phyllis Mary Sanderson, 7, Cresswell Place, S.W. 10.
Eric Alfred Speight, B.Sc., A.R.C.S., 61, Arthur Road, Wimbledon Park, S.W. 19.
Gordon Mitchell Wright, M.A., B.Sc., University Chemical Laboratory, Cambridge.

The following papers were read:

"The spatial structure of *cyclo*paraffins. Part I. A new aspect of Mohr's theory and the isomerism of decahydronaphthalene." By W. A. WIGHTMAN.

"Chenopodium oil. Part II. The hydrocarbon fraction." By T. A. HENRY and H. PAGET.

"Echitamine." By J. A. GOODSON and T. A. HENRY.

Ordinary Scientific Meeting, Thursday, June 18th, 1925, at 8 p.m., Dr. ARTHUR W. CROSSLEY, C.M.G., C.B.E., D.Sc., F.R.S., President, in the Chair.

The PRESIDENT announced:

1. That, as Fellows would know, the Council has had before it for some time past the possibility of unifying chemical abstracts in pure and applied chemistry in the English language, and as stated in the Report of Council for 1923—1924, the Bureau of Chemical Abstracts was created to effect such unification. The Council, at its meeting that afternoon, had under consideration the following proposals of the Bureau, that

(1) The format adopted for the unified publications should be double column quarto.

(2) The type should be that now employed in the "A" Abstracts.

(3) The existing overlap, estimated to be at least 10%, should be eliminated,

as well as the further suggestion that, in the event of these proposals being adopted, one annual index covering both sections of the Abstracts should be supplied to all members of the two Societies concerned.

The Council has adopted the following resolution:

"That the Council concurs in the Bureau's proposals for the unification of the Abstracts in Pure and Applied Chemistry, and urges the Fellows, in the interests of co-operation and of

the consolidation of British Chemical Abstracts, to accept loyally such changes of format and arrangement as these proposals may involve."

It was further intimated that the proposals of the Bureau have also been accepted by the Council of the Society of Chemical Industry.

The President expressed the hope that Fellows would loyally support the efforts being made in the direction of unifying British chemical abstracts.

2. That the Faraday Society will hold a General Discussion on "Photochemical Reactions in Liquids and Gases" at Oxford on October 1st and 2nd next. The subject will be discussed under two main heads: (1) Einstein's Law of Photochemical Equivalence, (2) The Mechanism of Photochemical Reactions. Part I will be opened by Professor A. J. Allmand (King's College) and Part II by Professor M. Bodenstein (Berlin).

Fellows of the Chemical Society will be welcomed at this meeting, and it is hoped to accommodate all who attend the meeting at Exeter College and Lincoln College. Those desirous of attending are asked to communicate at once with the Secretary of the Faraday Society, 90, Great Russell Street, London, W.C. 1, from whom full particulars may be obtained.

3. That a communication has been received from the Committee of the van't Hoff Fund for the endowment of research in pure and applied chemistry. The amount from this fund available for distribution during 1926 is about 1400 Dutch florins.

A Committee, consisting of Professor A. F. Holleman (President), Professor F. M. Jaeger, Professor A. Smits, and Mr. J. P. Wibaut (Secretary), has been appointed to award Grants. Applications should be sent before November 1st, 1925, by registered post to: "Het Bestuur der Koninklyke Akademie van Wetenschappen, bestemd voor de Commissie van het 'van't Hofffonds,' Trippenhuis, Kloveniersburgwal, Amsterdam." Every applicant is requested to submit a detailed account of the manner in which he proposes to expend the grant and to state the reasons for which he makes his application.

Papers embodying the results of the research may be published in any journal, but acknowledgment must be made of the source of the grant. Copies of papers containing the results of the research must be forwarded to the Committee.

4. That Volume V of the Annual Tables of Constants and Numerical Data is now ready, and is obtainable from Monsieur Charles Marie (9, Rue de Bagneux, Paris VI) who will be glad to send particulars on application.

Messrs. J. B. Reed and P. W. B. Harrison were formally admitted Fellows of the Chemical Society.

Certificates were read for the first time in favour of:

Joseph Raymond Dolphin, B.Sc., Chemical Department, The University, Birmingham.
Henry Wilfrid Keenan, 80, Upper Richmond Road, East Sheen, S.W. 14.
Bertram Grey Leatherbarrow, Hill Crest, Station Road, Brimington, Chesterfield.
Henry Nicholson, M.Sc., Aberlady, Osborne Road, Stockton-on-Tees.
Robert Saxon, B.Sc., Westfield Terrace, Baildon, Yorks.

The following Certificates have been authorised by the Council for presentation to ballot under Bye-Law I (2):

Bertram Cuthbert, c/o The British Australian Cotton Association, Ltd. Oil Mills, Brisbane.
Albert Louis Auguste Sigot, Institut de Chimie, 2, Rue Goethe, Strasbourg.

Mr. H. C. Sayer and Dr. H. Burgess were elected Scrutators, and a ballot for the election of Fellows was held, the following subsequently being declared elected as Fellows:

Marion Alice Battie, B.Sc., A.I.C.
Maung Hla Baw.
William Beesley.
William Ambler Berry, B.Sc.
Joseph John Blackie.
Samuel Cyril Blacktin, M.Sc.
Neville Melton Bligh, A.R.C.S., A.I.C.
Hugh Alexander Millar Borland, M.Sc., A.R.C.S.
Nirmal Boran Brohmachary, B.Sc.
Gertrude Margaret Bullick, B.Sc.
Ralph Edgar Cable.
Thomas Anthony Canning.
Leslie Marshall Clark, B.A., Ph.D., A.I.C.
Clive Kear Colwell, B.A.
Jan Coops.
William George Corderoy, B.Sc.
Oswald Pilkington Cronshaw.
John Carroll Culbert.
John Alexander Currie, B.A., B.Sc.
Alexander John Dey.
Thomas Dillon, M.A., D.Sc.
Octave Charles Marie Dony.
Howard Ecker.
Stanley James Featherston.
Malcolm Sinclair Gaskill.
William Edward Gibbs, D.Sc.
Norman Hamer, Assoc.M.C.T.
Ernest Hartshorne, B.Sc.Tech.
Arthur Harvey.
Charles Richard Hennings, Ph.D.
James Hindle.
Noel Waterman Vere Jones.
Frank William Linch, M.Sc., F.I.C.
Charles Lipshaw.
Thomas Moore, B.Sc.
Ivor Gray Nixon.
Vincent Joseph Occleshaw, M.Sc., A.I.C.
Ernest Charles Padgham.
James Arthur Prescott, M.Sc., A.I.C.
John Monteath Robertson, B.Sc., A.I.C.
Leon Rubenstein, B.Sc.
Malik Karam Singh, B.Sc.
Alexander Smith.
Norman Heath Smith, B.Sc.Tech.
Alec Thomas Streather, B.Sc., A.I.C.
John Thurgood, B.Sc.
Violet Corona Gwynne Trew.
Shojiro Uchida.
John Henry Walker, A.R.T.C., A.I.C.
Ernest Henry Warren, B.A.
James Watt.
William John Willis.

The following papers were read :

"Investigations on the dependence of rotatory power on chemical constitution. Part XXVII. Some esters of *p*-toluene-sulphonic and sulphinic acids." By H. PHILLIPS.

"The enhanced reactivity of newly formed molecules. Part I. The conversion of cyclols into ketones." By F. R. Goss and C. K. INGOLD.

"Constituents of *Myoporum lætum*, Forst (' The Ngaio '). Part I." By F. H. McDOWALL.

"A synthesis of datiscetin." By J. KALFF and R. ROBINSON.

"The relative directive powers of groups of the forms RO– and RR'N– in aromatic substitutions. Part IV. A discussion of the observations recorded in Parts I, II, and III." By J. ALLAN, A. E. OXFORD, R. ROBINSON, and J. C. SMITH.

"A new aspect of the photochemical union of hydrogen and chlorine, and a quantitative study of the induction period." By R. G. W. NORRISH.

The Council has made the following Grants from the Research Fund :

	£	*s.*	*d.*
Bromination products of caronic acid. R. G. Atkinson. ...	12	0	0
Mechanism of tautomeric change. J. W. Baker	15	0	0
Photographic investigation of explosion waves. C. Campbell ...	5	0	0
Chemistry of the aminotriazole derivatives (*contd.*). P. K. Dutt.	5	0	0
Chemistry of the acridine molecule (*contd.*). P. K. Dutt ...	5	0	0
Ring-chain tautomerism. S. Dutt	10	0	0
Investigation and synthesis of ten-membered rings of the cryptopine type. G. A. Edwards	10	0	0
Contact electrification. F. Fairbrother	7	0	0
Oxidation of 5 : 6-benzo-1 : 1'-diethylcarbocyanine bromide. E. H. St. C. Flack	10	0	0
Oxidation of sesquiterpenes. D. T. Gibson	5	0	0
Action of thionyl chloride on hydroxybenzenes. A. Green ...	5	0	0
Structure of alkaloids and related compounds. J. M. Gulland...	10	0	0
Derivatives of methyl quinolines (*contd.*). D. Ll. Hammick ...	10	0	0
Some polarity effects in substituted stilbenes and tolanes. H. A. Harrison	10	0	0
Synthesis of alkaloids and allied compounds. R. D. Haworth ...	15	0	0
Investigation of the structure of Ciba Yellow (*contd.*). E. Hope	10	0	0
Experiments on the tetrahedral theory to S–N rings. R. F. Hunter	5	0	0
Action of aldehydes on aldehyde cyanohydrins in solution. B. H. Ingham	5	0	0
Reactivity of bivalent carbon. Mrs. E. H. Ingold	10	0	0
Correlation of additive reactions with tautomeric change (*contd.*). Mrs. E. H. Ingold	5	0	0
Mobility of the $\alpha\beta$-$\beta\gamma$ change in unsaturated acids and unsaturated ketones. J. D. Johnson	15	0	0

	£	s.	d.
Influence of *gem*-dimethyl grouping on the formation and ring closure of substituted adipic acids. J. Kracovski	12	0	0
The constitution of strychnine and of brucine. F. Lions ...	20	0	0
Acid chlorides of the type chlorothiol benzoyl chloride and their products. E. W. McClelland	5	0	0
Influence of various substituents on the reactivity of organic compounds. I. Cyanohydrin formation. R. H. F. Manske...	10	0	0
Further investigation of the "Rotary Stillhead." J. E. Myers	10	0	0
Investigation of heterocyclic compounds related to tetrahydrocarbazole. S. G. P. Plant	15	0	0
Stereochemistry of arsenic. R. Raper	10	0	0
Rapid thermal decomposition of certain organic compounds under reduced pressure. J. Reilly	7	10	0
Ring-chain tautomerism of the $\beta\beta$-disubstituted lævulic acids and their structures. E. Rothstein	20	0	0
(*a*) Substituted indole derivatives			
(*b*) Orientation in trisubstituted benzene derivatives (*contd.*). L. Rubenstein	5	0	0
Chemistry of the three-carbon system. L. F. Smith	12	0	0
Three-carbon tautomerism (*contd.*). E. A. Speight	15	0	0
The parachor and chemical constitution. S. Sugden	10	0	0
Influence of water vapour on reactions of the type: Solid $\rightleftharpoons$ solid + gas. B. Topley	5	0	0
Physical properties of straight-chain alkyl benzenes and their derivatives (*contd.*). E. E. Turner	5	0	0
Investigation of sulphur trioxide (*contd.*). I. Vogel	5	0	0
Synthetical experiments in the *iso*quinoline series. R. Campbell	10	0	0
Separation of platinum from iridium and rhodium with special reference to complex nitrites. D. F. Withers	10	0	0
Total	£370	10	0

PUBLICATIONS FUND.

List of Donations and Subscriptions received from Fellows.

	Donations.			*Subscriptions.*		
	£	s.	d.	£	s.	d.
Acworth, J. J. . . .	50	0	0			
Albright, G. S. . . .	10	0	0			
Andrews, L. W. ($20.00) . .	4	9	11			
Appleyard, P.	.	.	.	1	0	0 per annum
Atkinson, H. M. . . .	10	0	0			
Audley, J. A.	.	.		10	0	„
Backer, H. J.	1	0	0			
Bahadur, His Highness Maharaja Rana Sir Bhawani Singh .	15	0	0			
Baker, H. B.	.	.		15	0	0 (£3 per annum for 5 years)
Barker, T. V.	2	0	0			
Barlow, H. W. L. . . .	1	0	0			
Barnett, E. de B. . . .	1	0	0			

	Donations. £	*s.*	*d.*	*Subscriptions.* £	*s.*	*d.*	
Barton, R.	2	0	0				
Bedford, C. S.	.	.	.	1	1	0	per annum
Beilby, Sir George	30	0	0				
Blackman, P.	.	.	.		3	0	,,
Boake, A.	5	0	0				
Boon, A. A.	.	.	.	1	0	0	,,
Borland, W. D.	10	10	0				
Borns, H.	10	0	0				
Boyle, M.	.	.	.		10	0	,,
Brady, O. L.	.	.	.	2	0	0	per annum for 5 years
Braunholtz, W. T. K.		10	0				
Brünnich, J. C.	10	0	0				
Bryant, J. J.	1	1	0				
Burgess, M. J.	.	.	.		10	0	per annum
Carlton, M.	.	.	.		10	0	,,
Carpmael, W.	.	.	.	1	1	0	,,
Carr, F. H.	5	5	0				
Carter, S. R.	.	.	.	1	0	0	,,
Caswell, A. E.	.	.	.		5	0	,,
Caven, R. M.	.	.	.	1	0	0	,,
Chapman, A. Chaston	10	10	0				
Chapman, D. L.	7	10	0				
Chattaway, F. D.	5	0	0				
Chikashigé, M.	5	0	0				
Clarke, H. T.	21	0	0				
Cohen, J. B.	.	.	.		10	0	,,
Colles, W. M.	1	1	0				
Collie, J. N.	10	0	0				
Colman, H. G.	10	0	0				
Cottrell, A.	.	.	.		10	0	,,
Cowburn, A. W.	5	0	0				
Cox, H. E.	.	.	.	1	1	0	per annum for 5 years
Crompton, H.	10	0	0				
Cross, C. F.	10	0	0				
Crossley, A. W.	20	0	0				
Crowle, R. S.	.	.	.	1	0	0	per annum for 5 years
Cuthbertson, L. M. G.	1	1	0				
Dakin, H. D.	10	0	0				
Denham, W. S.	10	0	0				
Dixon, H. B.	10	10	0				
Donnan, F. G.	5	0	0				
Doran, W.	1	0	0				
Douglas, J. R.	.	.	.		10	0	per annum
Dunn, F. P.	.	.	.	2	0	0	per annum for 5 years
Dutt, P. K.	.	.	.		10	0	per annum
Dyer, B.	25	0	0				
Easterfield, T. H.	10	0	0				

	Donations. £	*s.*	*d.*	*Subscriptions.* £	*s.*	*d.*	
Ehrhardt, E. F.	5	5	0				
Evans, U. R.	5	0	0				
Everest, A. E.	1	1	0				
Ewan, T.	5	0	0				
Farmer, R. C.	1	1	0				
Ferrier, G. S.	.		.	10	0		for 1925. Will subscribe annually; amount may vary
Forster, M. O.	25	0	0				
Freeth, F. A.	.		.	1	0	0	per annum
Friend, J. A. N.	.		.	1	0	0	,,
Frost, R.	3	3	0				
Fryer, A. C.	2	2	0				
Garner, W. E.	.		.	1	0	0	,,
Gibson, C. S.	5	0	0				
Gilmour, R.	3	3	0				
Gonville, C. H. K.	2	2	0				
Goodson, J. A.	.		.	1	0	0	per annum for 2 years
Green, A. G.	.		.	1	0	0	per annum for 3 years
Greenaway, A. J.	6	0	0				
Greeves, A.	5	0	0				
Hale, A. J.	2	0	0				
Hale, H. O.	1	0	0				
Hale, W. J.	10	0	0				
Harker, G.	2	0	0				
Hart, H. W.	.		.	1	0	0	per annum
Hartley, T.	5	5	0				
Hartung, E. J.	.		.	1	0	0	,,
Haworth, W. N.	5	0	0				
Heasman, B. R.	2	0	0				
Heilbron, I. M.	10	0	0				
Hellon, R.	.		.	1	1	0	(deceased)
Henderson, G. G.	5	0	0				
Henley, The Hon. F. R.	5	0	0				
Henry, T. A.	10	0	0				
Henstock, H.	1	1	0				
Heycock, C. T.	10	10	0				
Hill, C. A.	10	0	0				
Hills, H. F.	5	0	0				
Hills, W.	5	5	0				
Hinkel, L. E.	1	0	0				
Hislop, R. F.	.		.	5	0		per annum
Holcroft, H.	.		.	10	0		,,
Hooker, S. C.	10	0	0				
Hooper, E. Grant	5	0	0				
Hornby, R.	5	0	0				
Horton, H. V.		5	0				
Howard, D. L.	20	0	0				

	Donations.			*Subscriptions.*			
	£	*s.*	*d.*	£	*s.*	*d.*	
Ingold, C. K.	3	0	0				
Irvine, Sir James	.		.	3	0	0	per annum.
Irwin, W.	15	0	0				
Jackson, S.	7	10	0				
Jacob, C. W.	.		.	1	0	0	,,
Jenkins, J. H. B.	5	5	0				
Kenner, J.		5	0				
Kipping, F. S.	10	0	0				
Kynaston, J. W.	.		.	1	0	0	,,
Lamb, E.	5	0	0				
Lampitt, L. H.	1	10	0				
Lapworth, A.	20	0	0				
Lattey, W. T.	2	0	0				
Laurie, A. P.	.		.	1	0	0	,,
Law, H. E.	10	0	0				
Leathes, J. B.	15	0	0				
Lessner, C.	10	0	0				
Levy, S. I.	.		.	1	1	0	,,
Lewis, E. W.	.		.		10	0	,,
Lewis, W. C. McC.	.		.	1	0	0	,,
Lewis, W. J.	5	0	0				
Liveing, G. D.	50	0	0				
Liversidge, A.	25	0	0				
Low, A. M.		10	0				
Lowry, T. M.	5	0	0				
Lyons, A. B.	.		.	1	0	0	,,
Macalpine, F. C.	.		.	1	0	0	per annum from 1926
McBain, J. W.	1	0	0				
McEwen, B. C.	3	3	0				
McGowan, G.	1	1	0				
McKenzie, A.	3	3	0				
Main, H.	1	1	0				
Marcan, A.	5	5	0				
Martin, George, H.	1	0	0				
Martindale, W. H.	.		.	1	0	0	per annum
Martineau, S.	25	0	0				
Matthews, D. J.	.		.		10	6	,,
Maxwell, M.	10	0	0				
Meldrum, A. N.	7	10	0				
Mellor, J. W.	7	10	0				
Menzies, R. C.	4	4	0				
Merrett, W. H.	.		.	1	1	0	for 1924
Miers, Sir Henry A.	8	0	0				
Moody, G. T.	.		.	5	0	0	per annum for 10 years
Moore, T. S.	.		.	1	0	0	per annum
Moyle, R. E.	5	0	0				
Muir, M. M. P.	.		.	1	0	0	per annum for 5 years
Munroe, C. E.	10	0	0				

	Donations. £ s. d.	*Subscriptions.* £ s. d.
Murphy, A. J.		3 0 0 per annum
Neilsen, R. G.		6 0 „
Norrish, R. G. W.		1 0 0 per annum for 3 years
O'Mahony, D. J.		1 1 0 per annum for 3 years
Ormiston, A. R.	10 0 0	
Page, A. B. P.	2 0 0	
Perkin, A. G.	10 0 0	
Perkin, W. H.	50 0 0	3 0 0 per annum
Perman, E. P.		1 0 0 „
Petrie, T. C.	1 1 0	
Philip, J. C.		1 1 0 per annum for 5 years
Picton, H.		1 0 0 per annum
Pilley, J. J.	2 0 0	
Plant, S. G. P.	1 0 0	
Plimmer, R. H. A.		1 1 0 „
Polack, W. G.		7 6 „
Pollard, W. B.	16 0 0	
Pope, T. H.	10 6	
Pope, Sir William J.	20 0 0	
Price, E. E.		3 0 0 „
Price, J. E. B.		10 0 „
Price, T. Slater	3 3 0	
Probert, M. E.		10 0 „
Purves, G. T.	1 1 0	
Purvis, J. E.	5 0 0	
Pyman, F. L.	10 0 0	
Quastel, J. H.	1 0 0	
Quibell, O.	1 0 0	
Rankin, J.	5 0 0	
Rây, Sir Prafulla		3 0 0 „
Raymond, P. J.	1 1 0	
Reverson, W.		10 0 „
Rintoul, W.		1 0 0 per annum for 5 years
Rivett, A. C. D.		1 0 0 per annum
Robertson, Sir Robert	10 0 0	
Robinson, R.	10 0 0	
Rose, Sir Thomas K.		1 0 0 „
Rosenheim, O.		2 0 0 per annum for 5 years
Rule, H. G.		1 0 0 per annum
Salomons, Sir David, Bart.	10 0 0	
Salter, M. J.	5 0 0	
Sand, H. J. S.	5 0 0	
Schofield, J. A.	2 2 0	
Shimomura, A. & K.	10 0 0	
Shoesmith, J. B.		15 0 „ (£1 for 1924)
Sidgwick, N. V.	100 0 0	

	Donations. £ s. d.	*Subscriptions.* £ s. d.
Silberrad, C. A.	. . .	1 0 0 per annum.
Silberrad, O.	1 1 0	
Simpson, W. S.	10 0 0	
Small, F. B.	. . .	£1 for 1924; 10s. for 1925
Smetham, A.	. . .	1 0 0 per annum for 5 years
Smiles, S.	40 0 0	
Smith, Clarence	. . .	1 0 0 per annum
Smith, Claude	5 0 0	
Smith, F. C.	. . .	5 0 ,,
Smith, J. D. M.	. . .	1 1 0 occasionally
Stansfield, A.	. . .	1 0 0 per annum
Steuart, D. R.	6 0 0	
Stevenson, A.	5 5 0	
Storr, B. V.	10 0	
Swan, E.	10 0	
Thackrah, J. R.	. . .	10 0 (resigned)
Thomas, H. W.	. . .	2 0 0 per annum
Thompson, C. M.	10 10 0	
Thomson, R. W. M.	. . .	5 0 (deceased)
Thorpe, J. F.	50 0 0	
Trehärne, F. G.	. . .	1 0 0 per annum
Tucker, T.	. . .	1 1 0 ,,
Turbutt, R. B.	. . .	10 0 ,,
Verma, P. L.	. . .	10 0 ,,
Voelcker, E. W. & J. A.	25 0 0	
Walker, A.	50 0 0	
Walker, Sir James	10 0 0	
Warwick, G. R.	1 0 0	
Whiteley, M. A.	. . .	10 0 ,,
Williams, W. Carleton	10 0 0	
Wilson, C. P.	. . .	10 0 ,,
Wilson, F. J.	5 0 0	
Withers, J. C.	. . .	1 0 0 ,,
Woolcock, W. J. U.	5 0 0	
Wright, W. T.	10 0 0	
Wynne, W. P.	. . .	5 5 0 per annum for 4 years
Young, G. W.	. . .	5 0 per annum
Young, J. H.	2 0 0	
Young, Sydney	10 0 0	
Total	£1387 2 5	

THE LIBRARY.

The Library will be closed for Stocktaking from Monday, August 3rd, until Saturday, August 15th, 1925 (inclusive). During the

following four weeks (August 17th to September 12th), the Library will close daily at 5 p.m.

LIST OF FELLOWS, 1925.

The List of Fellows for 1925 is now in active preparation and will be supplied to those Fellows who make application to the Assistant Secretary by the 31st July, 1925. In order that the new List may be as complete as possible, Fellows are invited to notify any change of address, or other alteration, before that date.

BERICHTE, 1915–1924.

Sets of the Berichte from 1915 to 1924 (10 years) are now offered to Fellows of the Society at £22, carriage extra. Application should be made to Mr. S. E. Carr.

List of papers, or Abstracts thereof, received between May 22nd and June 18th, 1925. (This List does not include the titles of papers which have been read at a Scientific Meeting or which have appeared in the Journal.)

"A low voltage standard cell." By H. Mastin.

"Hydrogen and oxygen electrode titrations of some dibasic acids and of dextrose." By H. T. S. Britton.

"Sulphur sesquioxide." By I. Vogel and J. R. Partington.

"The relation of homogeneous to catalysed reactions. The catalytic decomposition of hydrogen iodide on the surface of gold." By C. N. Hinshelwood and C. R. Prichard.

"The decomposition of carbon monoxide in the corona due to alternating electric fields. Part I." By M. Crespi and R. W. Lunt.

"The formation and stability of spiro-compounds. Part XII. Further evidence for the multiplanar configuration of the *cyclo*heptane ring." By J. W. Baker.

"The condensed ternary system phenol–water–salicylic acid." By C. R. Bailey.

"The hydration of strong electrolytes and some properties of salt solutions." By J. N. Sugden.

"The action of sulphur on amines. Part III. *o*-, *m*-, and *p*-Chloroanilines." By H. H. Hodgson and J. H. Wilson.

"The system sodium sulphite–sodium hydroxide–water." By D. L. Hammick and J. A. Currie.

"Synthetical experiments in the *iso*quinoline group. Part V. Synthesis of substances allied to oxyberberine." By R. D. HAWORTH, W. H. PERKIN, and H. S. PINK.

"Amino benzothiazoles. Part II. The naphthylamino naphthiazoles and their bromo derivatives." By R. F. HUNTER.

"Negative adsorption: the surface tensions and activities of some aqueous salt solutions." By A. K. GOARD.

"The structure of α-campholytic acid. A correction." By J. P. C. CHANDRASENA, C. K. INGOLD, and J. F. THORPE.

"The interaction of carbon dioxide and hydrogen on the surface of tungsten." By C. N. HINSHELWOOD and C. R. PRICHARD.

"Note on potassium antimonoxalate." By L. H. A. HOLMES and E. E. TURNER.

"Studies on the Walden inversion. Part IX. The influence of the solvent on the sign of the product in the conversion of β-bromo-β-phenylpropionic acids to β-hydroxy-β-phenylpropionamides." By G. SENTER and A. M. WARD.

"'Co-ordination' and the periodic table." By I. AUCKEN.

"Anode phenomena in the electrolysis of potassium ethyl malonate." By J. B. ROBERTSON.

"The isomerism of the styryl alkyl ketones. Part II. The isomerism of the homologues of 2-hydroxystyryl, and of 3-methoxy-, and 4-hydroxy-styryl methyl ketones." By A. MCGOOKIN and D. J. SINCLAIR.

"Hydrogen electrode studies of the precipitation of hydroxides. Part I. Magnesium, manganous, ferrous, cobalt, nickel, and thorium." By H. T. S. BRITTON.

"Stereoisomeric azo-dyes." By G. T. MORGAN and D. G. SKINNER.

"4- and 4′-Methoxybenzoylbenzoin." By H. GREENE.

"The relative rates of conversion of phenoxyphenyldichloroarsine and its chloro-derivatives into chlorophenoxarsines." By E. ROBERTS and E. E. TURNER.

"Chemistry of petroleum. Part II. The action of sodium hypochlorite on types of sulphur compounds found in petroleum distillates." By S. F. BIRCH and W. S. G. P. NORRIS.

"Derivatives of δ-*o*-aminobenzoylvaleric acid." By M. J. PATERSON and S. G. P. PLANT.

"The action of formic acid on certain sesquiterpenes." By J. M. ROBERTSON, C. A. KERR, and G. G. HENDERSON.

"Syntheses of disulphoxides." By D. T. GIBSON, C. J. MILLER, and S. SMILES.

"The effect of gum arabic and other emulsifiers on the acid hydrolysis of esters in heterogeneous systems." By R. C. SMITH.

"Lithium arc spectrum for polarimetric use." By P. C. AUSTIN.

"Bismuth dihydride." By E. J. WEEKS and J. G. F. DRUCE.

"Reduction product of the hydroxyanthraquinones. Part VI." By A. G. PERKIN and G. YODA.

"A wandering of the acetyl group during methylation." By O. KUBOTA and A. G. PERKIN.

"The supposed formation of 1 : 2 : 4-oxadi-imine rings from nitroso-compounds and methylenearylamines." By G. N. BURKHARDT, A. LAPWORTH, and E. B. ROBINSON.

"The reaction of bromine with aliphatic acids. Catalytic effect of acyl halides." By H. B. WATSON.

ADDITIONS TO THE LIBRARY.

I. *Donations.*

CLARKE, FRANK WIGGLESWORTH. The data of geochemistry. 5th edition. Washington 1924. pp. 842. (*Recd.* 26/5/25.)
From the Author.

DANIELS, GEORGE WILLIAM. Refrigeration in the chemical industry. London 1925. pp. x + 141. ill. (*Recd.* 29/5/25.)
From the Publisher: Mr. A. J. Rayment.

EASTMAN KODAK COMPANY. Abridged scientific publications from the Research Laboratories. Vol. VIII, 1924. Rochester, N.Y. 1925. pp. 156 + vi. ill. (*Reference.*)
From the Eastman Kodak Company.

IMPERIAL COLLEGE CHEMICAL SOCIETY. Journal. Vol. IV, containing the papers read during the session 1924—1925. London 1925. pp. 54. ill. (*Reference.*) From the Society.

KLAR, M. The technology of wood distillation with special reference to the methods of obtaining the intermediate and finished products from the primary distillate. Translated [from the 2nd German edition] by ALEXANDER RULE. With an additional chapter by the translator. London 1925. pp. xvi + 496. ill. 25*s.* net. (*Recd.* 8/6/25.)
From the Publishers: Messrs. Chapman & Hall.

MORRICE, ALEXANDER. A treatise on brewing: wherein is exhibited the whole process of the art and mystery of brewing the various sorts of malt liquor; with practical examples upon each species. Together with the manner of using the thermometer and saccharometer; elucidated by examples, and rendered easy to any capacity, in brewing London porter [etc.]. London 1802. pp. [xii] + v to 180 + [xii]. ill. (*Reference.*)
From Dr. Alexander Scott.

NATIONAL BENZOLE ASSOCIATION and UNIVERSITY OF LEEDS. *Joint Benzole Research Committee.* Second report. London 1925. pp. 246. ill. (*Recd.* 18/5/25.)

From the National Benzole Association.

ORGANIC SYNTHESES: an annual publication of satisfactory methods for the preparation of organic chemicals. Vol. IV. Edited by OLIVER KAMM [and others]. New York 1925. pp. viii + 90. 7*s.* 6*d.* net. (*Recd.* 22/5/25.)

From the London Publishers: Messrs. Chapman & Hall.

TIBA. Revue Générale de Teinture Impression Blanchiment Apprêt et de Chimie Textile et Tinctoriale et Revue de la Soie Artificielle. Year II, etc. Paris 1924 +. (*Reference.*)

From the Publishers.

II. *By Purchase.*

BIRTWHISTLE, GEORGE. The principles of thermodynamics. Cambridge 1925. pp. x + 164. ill. 7*s.* 6*d.* net. (*Recd.* 10/6/25.)

CHEMICAL ENGINEERING AND CHEMICAL CATALOGUE 1925: a catalogue of heavy and fine chemicals, raw material, machinery, plant and equipment applicable to production industries. Compiled with the co-operation of leading British manufacturers by LEONARD HILL. Edited by DUDLEY MAURICE NEWITT. London 1925. pp. 260. ill. (*Reference.*) 21*s.* net.

DUKES, CUTHBERT. The bacteriology of food. London 1925. pp. xii + 180. ill. 7*s.* 6*d.* net. (*Recd.* 10/6/25.)

FRIEND, JOHN NEWTON. [Editor.] A text-book of inorganic chemistry. Vol. III. Part i. The alkaline earth metals. By MAY SYBIL BURR (née LESLIE). London 1925. pp. xxvi + 346. (*Reference.*) 20*s.* net.

HOWE, H. E. [Editor.] Chemistry in industry: a coöperative work intended to give examples of the contributions made to industry by chemistry. New York 1924. pp. xiv + 372. ill. 6*s.* net. (*Recd.* 16/4/25.)

JÖRGENSEN, ALFRED. Micro-organisms and fermentation. 5th edition. Revised by the Author with the assistance of S. H. DAVIES. London 1925. pp. xiv + 468. ill. 30*s.* net. (*Recd.* 10/6/25.)

JOHNSON, J. B. Materials of construction. Rewritten by M. O. WITHEY and JAMES ASTON. Edited by F. E. TURNEAURE. 6th edition. New York 1925. pp. xx + 866. ill. 30*s.* net. (*Recd.* 13/5/25.)

KLOOSTER, HENRY S. VAN. Lecture and laboratory experiments in physical chemistry. 2nd edition. Easton, Pa. 1925. pp. x + 274. ill. 12*s.* net. (*Recd.* 15/5/25.)

LADOO, RAYMOND B. Non-metallic minerals: occurrence—preparation—utilization. New York 1925. pp. viii + 686. ill. 30*s*. net. (*Recd*. 10/6/25.)

LORD, LEONARD J. Practical butter and cheese making. London 1925. pp. 200. ill. 10*s*. 6*d*. net. (*Recd*. 13/5/25.)

MELLOR, JOSEPH WILLIAM. Modern inorganic chemistry. New edition. London 1925. pp. xx + 1104. ill. 12*s*. 6*d*. net. (*Recd*. 15/5/25.)

NEWMAN, FRANK HERBERT. The production and measurement of low pressures. London 1925. pp. 192. ill. 16*s*. net. (*Recd*. 10/6/25.)

NORTH, SYDNEY H., and GARBE, J. B. Low temperature distillation, home oil supply and the utilization of "waste" coal. London 1925. pp. vi + 216. ill. 15*s*. net. (*Recd*. 13/5/25.)

O'BRIEN, W. B. Factory practice in manufacture of azo dyes. Easton, Pa. 1924. pp. viii + 176. ill. 22*s*. 6*d*. net. (*Recd*. 16/4/25.)

PARRY, ERNEST JOHN. Parry's cyclopædia of perfumery. 2 vols. London 1925. pp. vi + 840. (*Reference*.) 36*s*. net.

RICHMOND, HENRY DROOP. The laboratory book of dairy analysis. 3rd edition. London 1925. pp. viii + 118. ill. 5*s*. net. (*Recd*. 15/5/25.)

SIM, JAMES. Steam condensing plant in theory and practice. London 1925. pp. xiv + 272. ill. 18*s*. 6*d*. net. (*Recd*. 10/6/25.)

THOMPSON, MAURICE DE KAY. Theoretical and applied electrochemistry. Revised edition. New York 1925. pp. xx + 552. ill. 20*s*. net. (*Recd*. 13/5/25.)

THOMSON, SIR JOSEPH JOHN. The electron in chemistry: being five lectures delivered at the Franklin Institute, Philadelphia. [Philadelphia] 1923. pp. vi + 144. ill. 10*s*. 6*d*. net. (*Recd*. 15/5/25.)

VEDDER, EDWARD B. The medical aspects of chemical warfare. With a chapter on the naval medical aspects of chemical warfare by DUNCAN C. WALTON. Baltimore 1925. pp. xvi + 328. ill. 32*s*. 6*d*. net. (*Recd*. 26/5/25.)

WELLS, HARRY GIDEON. The chemical aspects of immunity. New York 1925. pp. 254. 20*s*. net. (*Recd*. 18/5/25.)

WILLIAMS, GEORGE BRANSBY. Sewage disposal in India and the East. Calcutta 1924. pp. x + 230. ill. 17*s*. 6*d*. net. (*Recd*. 13/5/25.)

WOOD, THOMAS BARLOW. Animal nutrition. London 1924. pp. viii + 226. 4*s*. 6*d*. net. (*Recd*. 15/5/25.)

WORLD POWER CONFERENCE, First. London 1924. Transactions. 5 vols. London [1925]. pp. xxiv + 1506, xviii + 1600, xvi + 1502, xx + 1816. (*Reference*.)

PROCEEDINGS

OF THE

CHEMICAL SOCIETY.

Ordinary Scientific Meeting, Thursday, October 15th, 1925, at 8 p.m., Dr. ARTHUR W. CROSSLEY, C.M.G., C.B.E., D.Sc., F.R.S., President, in the Chair.

The PRESIDENT referred to the loss sustained by the Society, through death, of the following Fellows:

	Elected.	*Died.*
Richard Burtles	May 3rd, 1923.	July 3rd.
Charles Frederick Chandler	Feb. 1st, 1872.	Aug. 25th.
William Henry Deering	April 1st, 1869.	Sept. 5th.
William Joseph Dibdin	April 15th, 1880.	June 8th.
Samuel Jackson	Dec. 15th, 1892.	July 27th.
Francis Robert Japp	Feb. 6th, 1879.	Aug. 1st.
Reginald A. Joyner	Dec. 6th, 1917.	Oct. 8th.
Daniel Rankin Steuart	Dec. 15th, 1881.	Aug. 1st.
Leonard E. Vlies	Feb. 21st, 1918.	July 26th.

The PRESIDENT announced that:

1. The first of the two Informal Lectures to be held this Session will be delivered in the Rooms of the Society on Thursday, November 26th, 1925, by Professor R. Robinson, D.Sc., F.R.S., who has chosen as his subject:

> "Recent Researches on the Structural Relationships of Some Plant Products."

Special attention is drawn to the fact that the lecture will be delivered at 6 *o'clock* instead of at 8 *o'clock* as stated on the meeting card.

2. Following the innovation made in October, 1923, it has been decided to hold next month a united dinner for British Chemists. The dinner, to be called "British Chemistry Dinner" is under the auspices of the Chemical Society, the Institute of Chemistry, the Society of Chemical Industry, the Association of British Chemical Manufacturers, the Institution of Petroleum Technologists, the Society of Public Analysts, the Bio-Chemical Society, the Oil and Colour Chemists' Association, and the Chemical Industry Club,

and will be held at the Connaught Rooms, Great Queen Street, W.C. 2, on Friday, November 13th, 1925, at 6.30 for 7 p.m. Dr. W. R. Ormandy, Chairman of the Chemical Industry Club, will preside.

The price of the tickets is 15*s*. each (not including wine) for lady or gentleman, and as the accommodation is limited to about 400, early application is advisable.

Besides the Loyal Toasts, there will be only two other Toasts, namely, "The Profession and Industry of Chemistry" and "The Guests." After dinner, there will be dancing and musical items.

Application for tickets (15*s*. each), with remittance, should be sent to the Secretary of the Chemical Industry Club, 2, Whitehall Court, S.W. 1.

3. The Selection Committee of the Harrison Memorial Prize will meet shortly to consider the award of the Harrison Prize.

The Prize, of the value of about £150, is to be awarded to the chemist of either sex being a natural born British subject and not at the time over thirty years of age, who, in the opinion of the Selection Committee, during the previous five years has conducted the most meritorious and promising original investigations in any branch of pure or applied chemistry and published the results of those investigations in a scientific periodical or periodicals.

Provided that in the opinion of the Selection Committee there is a candidate of sufficient distinction to warrant an award of the Prize, the award is to be made in December, 1925.

The Selection Committee is prepared to receive applications, nominations or information as to candidates eligible for the Prize. Any such information must be received by The President, The Chemical Society, Burlington House, Piccadilly, W. 1, not later than Tuesday, December 1st, 1925.

4. As Fellows are already aware, the Council has approved the proposals of the Bureau of Chemical Abstracts (see Procs. for June, 1925), aiming at the unification of abstracts of chemical papers in this Country. As a consequence of the arrangements made, "British Chemical Abstracts" will appear as from January, 1926, in two sections, namely, A (Pure Chemistry) and B (Applied Chemistry), and will be in the same format and type, without overlap, and with one common index at the end of the year. The format adopted is that at present employed for the "B" Abstracts; beginning, therefore, with January, 1926, Fellows will receive the Abstracts in Pure Chemistry in quarto double-column size. This clearly means a break with the past, so far as the Chemical Society is concerned, but the Council trusts that in the interests of co-operation the Fellows will accept these changes with loyalty.

5. The price of the Annual Reports for 1925, Vol. XXII, will be the same as for Vol. XXI, namely 5*s*. 6*d*. post free to those Fellows who apply by Christmas Day, 1925. Application should be made to the Assistant Secretary, and must be accompanied by a remittance for 5*s*. 6*d*.

6. Volume I of the Memorial Lectures has been reproduced by a photographic process, and is now on sale at the Publishers, Messrs. Gurney & Jackson, 33, Paternoster Row, E.C. 4, price to Fellows 9*s*. post free.

7. Sets of the Berichte from 1915–1924 (10 years) can be obtained on application to the Assistant Secretary at the reduced price of £22, plus carriage.

8. In continuance of the arrangement made with the American Chemical Society, the *Journal of the American Chemical Society*, *Industrial and Engineering Chemistry*, and *Chemical Abstracts*, can be obtained by Fellows at the following reduced rates :

Price for any one journal $7.25, post free,
Price for any three journals $17.50, post free,

while *Chemical Reviews* is offered to Fellows at $4.50, post free. Applications should be made as soon as possible to Dr. Charles L. Parsons, Secretary, American Chemical Society, 1709, G. Street N.W., Washington, D.C., U.S.A.

The *Journal of Physical Chemistry* is obtainable by Fellows at $8.00 post free, published at $10.00. Application should be made to the *Journal of Physical Chemistry*, Ithaca, N.Y., U.S.A.

9. A meeting of the Research Fund Committee will be held in December next. Applications for Grants, to be made on forms obtainable from the Assistant Secretary, must be received on or before Tuesday, December 1st, 1925. Applications from Fellows will receive prior consideration.

All persons who received Grants in December, 1924, or in December of any previous year, whose accounts have not been closed by the Council, are reminded that Reports must be returned by December 1st.

The following were formally admitted Fellows of the Chemical Society : G. M. Bullick, C. G. Trew, I. C. P. Smith, W. G. Corderoy, E. H. Warren, I. A. Smith, C. F. Flint, R. R. Garran, N. M. Bligh, and E. C. Padgham.

Certificates were read for the first time in favour of :

Robert Leslie Andrew, Dominion Laboratory, Wellington, New Zealand.
Louis Baissac, Curepipe Road, Mauritius.
William Francis Barker, Ph.D., Rhodes University College, Grahamstown, S. Africa.
Ralph Basden, The Technical College, Newcastle, N.S.W.

Frank Bell, 11, Edwy Parade, Gloucester.
Arthur Neville Copnall Bennett, B.Sc., 27, Dale Road, Luton.
John Cecil Bird, B.Sc., A.I.C., 72, Dyne Road, Kilburn, N.W. 6.
Lionel Christopher William Birkett, B.Sc., Moor House, North Road, Spennymoor.
James Boyd, F.I.C., P.O. Box 1162, Johannesburg.
Frank Symonds Bradhurst, c/o Messrs. Holbrooks, Ltd., Danks Street, Waterloo, Sydney.
John Hildred George Carlile, B.Sc., A.R.C.S., 29, Orlando Road, Clapham, S.W. 4.
Leslie James Chalk, B.Sc., 14, Shrubbery Road, Southall.
Rama Charan, B.Sc., B.Sc.Tech., 12, Bank Road, Allahabad.
Edward Mortimer Crowther, D.Sc., F.I.C., Rothamsted Experimental Station, Harpenden, Herts.
Frank Edwin Dickinson, Research Establishment, Sutton Oak, St. Helens.
William Donovan, M.Sc., Dominion Laboratory, Wellington, New Zealand.
John Stanley Dunn, M.A., Ph.D., A.I.C., 39, Victoria Park, Cambridge.
Edwin Francis Edwards, c/o Messrs. Holbrooks, Ltd., Waterloo, Sydney.
John Moelwyn Edwards, 92, Jamaica Road, Rotherhithe, S.E. 16.
James Walter Shanks Gemmell, B.Sc., Helen's Villa, Fleming Place, St. Andrews.
Francis Reginald Glover, 98/100, St. Peters Street, Nottingham.
Felix John Theodore Grigg, M.Sc., A.I.C., Government Buildings, Christchurch, New Zealand.
John Hall, M.Sc., A.I.C., 202, Burton Road, Derby.
Herbert Sim Hirst, B.Sc., Trinity College, Cambridge.
Toru Iwadare, c/o Banyu Pharmaceutical Co., Ltd., 174, Shimomeguro, Tokyo, Japan.
David Christopher Mendis Jayewardene, Fern Bank, Moratuwa, Ceylon.
Charles Benjamin Johnson, 134, Preston New Road, Blackburn.
Walter Idris Jones, Ph.D., B.Sc., 7, Manor Street, Cambridge.
Charles King, 141, Bath Street, Glasgow.
Frederick Karl Victor Koch, B.Sc., A.R.C.S., 9, Crossfield Road, Hampstead, N.W. 3.
Charles Dudley Langford, B.Sc., A.R.C.S., 43, Ashbourne Avenue, Temple Fortune, N.W. 11.
Henry Guinness de Laszlo, B.A., Ph.D., 3, Fitzjohn's Avenue, Hampstead, N.W. 3.
Sam Lenher, B.A., 15, Gordon Street, W.C. 1.
William Macartney, c/o Messrs. Grattan & Co., Ltd., Belfast.
William Francis Martin, F.I.C., 27, Shandon Crescent, Edinburgh.
Arthur Moore, Highfield, Oakworth, Keighley.
John Blackburn Murgatroyd, 90, St. George's Square, S.W. 1.
Chitsukhlal Hiralal Nanavati, 80, Esplanade Road, Fort, Bombay.
Anna Maria O'Mara, 83, Elsham Road, Holland Park, W. 14.
Norman Frederick Parker, B.A., A.I.C., 45, Sellons Avenue, Harlesden, N.W. 10.
Marjorie Ellen Pring, B.Sc., 66, St. Augustine's Avenue, S. Croydon.
Herbert Charles Roberts, 15, Estcourt Terrace, Headingley, Leeds.
George Baty Scott, 37, Woodbridge Road, Knowle, Bristol.
Rupert Boswood Scammell, B.Sc., c/o Messrs. F. H. Faulding & Co., Ltd., Castlereagh Street, Redfern, Sydney.
Upo Shin, Agricultural Farm, Mandalay.

Dalip Singh, Ph.D., near Tehsil P.O., Lahore.
William Veale Thorpe, B.A., 270, Balham High Road, S.W. 12.
William Milburn Towler, B.Sc., 28, Denton Avenue, Roundhay, Leeds.
David Traill, B.Sc., 58, Chalmers Street, Dunfermline.
Donald Morrison Turner, 40–42, Lexington Street, W. 1.
Geoffrey Turner, B.Sc., 85, Winchester Avenue, Leicester.
Frederick Henry Webb, St. Malo, Jameson Road, Harpenden, Herts.
Hugh Amphlett Williams, 249, Kennington Road, S.E. 11.
Robert Harding Williams, 131, Anlaby Road, Hull.
John James Benjamin Wolfe, 24, Greyhound Road, Hammersmith, W. 6.
John Frederick Zimmermann, 17, Stile Hall Gardens, Chiswick, W. 4.

The following papers were read:

"The effect of ultra-violet light on dried hydrogen and oxygen." By H. B. BAKER and M. CARLTON.

"A new per-oxide of barium." By M. CARLTON.

"The production of oxide-films on copper at ordinary temperatures." By U. R. EVANS.

"The structural isomerism of the oximes. Part III. The benzilmonoximes." By A. H. ATACK and F. W. ATACK.

List of papers, or abstracts thereof, received between June 18th and October 15th, 1925. (This list does not include the titles of papers which have been read at an Ordinary Scientific Meeting, or which have appeared in the Journal.)

"The action of sulphuretted hydrogen on a neutral solution of potassium permanganate." By H. B. DUNNICLIFF and S. DAYAL.

"Note on the preparation of thiocarbanilide." By S. J. C. SNEDKER.

"Studies with the microbalance. Part II. The photochemical decomposition of silver chloride." By E. J. HARTUNG.

"Preparation, hydrolysis and reduction of the isomeric fluorobenzyl bromides." By J. B. SHOESMITH and R. H. SLATER.

"The action of silica on electrolytes. Part II." By A. F. JOSEPH and H. B. OAKLEY.

"The formation and growth of silver nuclei in the decomposition of silver oxalate." By J. Y. MACDONALD and C. N. HINSHELWOOD.

"Researches in the menthone series. Part I." By J. READ and A. M. R. COOK.

"Studies in adsorption by the application of optical methods. Fixation by dispersoids of methylene-blue within the disperse phase." By A. FODOR and R. RIWLIN.

"The physical chemistry of the metal–ammonium complexes. Part I. The blue of the copper–ammonium complexes." By S. S. BHATNAGAR, M. PRASAD and D. NATH.

"The correlation of absorption spectra with ionisation in violuric acid." By R. A. MORTON and A. H. TIPPING.

"Absorption spectra and lactam-lactim tautomerism." By R. A. MORTON and E. ROGERS.

"The heat of combustion of salicylic acid." By E. BERNER.

"An electrometric and phase rule study of some basic salts of copper." By H. T. S. Britton.

"The distribution of pyridine between water and benzene." By R. M. Woodman and A. S. Corbet.

"The velocity of decomposition of oxalic acid in solution." By D. L. Watson.

"The absorption of gases in colloidal solutions." By A. Gatterer.

"A circulation apparatus for gases." By N. G. Chatterji and G. I. Finch.

"2 : 4-Dinitrophenylhydrazine as a reagent for aldehydes and ketones." By O. L. Brady and G. V. Elsmie.

"The methylation of the oximes of benzil." By O. L. Brady and H. M. Perry.

"The alkaline oxidation of some carbohydrates by means of dyestuffs, considered quantitatively." By E. Knecht and E. Hibbert.

"Unstable states of solutions of sodium behenate." By M. E. Laing and collaborators.

"Note on the preparation of *p*-nitrophenylhydrazine." By H. H. Hodgson and H. G. Beard.

"The preparation of 2-nitro-1-halogen naphthalenes and of β-nitronaphthalene." By H. H. Hodgson and E. Kilner.

"The swelling and dispersion of some colloidal substances in ether–alcohol mixtures." By E. W. J. Mardles.

"The relationship of salts in dilute aqueous solution as determined by their influence on the critical solution temperature of the system phenol–water." By J. H. Carrington, L. R. Hickson, and W. H. Patterson.

"The colorimetric dissociation constants of dinitrocatechol and dinitroresorcinol." By F. C. Laxton, E. B. R. Prideaux, and W. H. Radford.

"The cyanine dyes. Part IX. The mechanism of the condensations of quinaldine alkiodides in presence of bases." By W. H. Mills and R. Raper.

"Dibenzylquinaldine." By W. H. Mills and A. T. Akers.

"The action of nitrous acid upon amides and other 'amino' compounds." By R. H. A. Plimmer.

"Olefinic terpene ketones from the volatile oil of flowering *Tagetes glandulifera*. Part I." By T. G. H. Jones and F. B. Smith.

"On the interaction between copper and sulphuric acid." By C. W. Rogers.

"Trypanocidal action and chemical constitution. Part II. Arylamides of 4-aminophenyl-arsinic acid." By H. King and W. O. Murch.

"The butyl esters of the simpler amino-acids. Part I." By W. T. J. Morgan.

"The influence of salts in ethyl alcohol solution on the mutual miscibility temperature of the system ethyl alcohol–paraffin." By E. J. Howard and W. H. Patterson.

"Condensations of the sodium derivatives of trimethylene glycol and glycerol." By A. Fairbourne and G. E. Foster.

"An investigation of the effect of differential aëration on corrosion by means of electrode potential measurements." By A. L. McAulay and F. P. Bowden.

"The recognition of allotropy in metals." By D. Stockdale.

"Solubility influences. Part I. The effect of some salts, sugars, and temperature on the solubility of ethyl acetate in water." By S. Glasstone and A. Pound.

"Experiments on the synthesis of apofenchocamphoric acid. Preparation of αα-dimethyl-β′-carboxyadipic acid." By K. C. Roberts.

"Electrometric study of the reactions between alkalis and silver nitrate solutions." By H. T. S. Britton.

"Electrometric separation of the iodide, bromide and chloride of silver." By H. T. S. Britton.

"Reduction products of the hydroxyanthraquinones. Part VII." By W. B. Miller and A. G. Perkin.

"Chloro-derivatives of *m*-hydroxybenzaldehyde." By H. H. Hodgson and H. G. Beard.

"The nitration of *m*-bromophenol." By H. H. Hodgson and F. H. Moore.

"The reduction of arsenic compounds by sodium hyposulphite. The production of subsulphides of arsenic." By W. Farmer and J. B. Firth.

"The electrical conductivities of hydrochloric acid and potassium chloride in water and acetone–water mixtures." By T. K. Brownson and F. M. Cray.

"Metallocyclic compounds. Part I. Compounds of tellurium." By H. D. K. Drew.

"The action of hydrogen fluoride on compounds of selenium and tellurium. Part I. Selenium dioxide." By E. B. R. Prideaux and J. O'N. Millott.

"The resolution of an asymmetric arsenic compound into its optically active forms." By W. H. Mills and R. Raper.

"The electrical conductivity of phosphorus pentachloride." By G. W. F. Holroyd, H. Chadwick, and J. Mitchell.

"Hydrogen electrode studies of the precipitation of basic chromates, borates and carbonates." By H. T. S. Britton.

"The relation between chemical constitution and pungency in acid amides." By E. C. S. Jones and F. L. Pyman.

"The rate of reaction of bromine with aqueous formic acid." By D. L. Hammick, W. K. Hutchison and F. R. Snell.

"The quaternary salts of benzoxazoles." By L. M. Clark.

"$\gamma\gamma'$-Dichloropropyl sulphide." By G. M. Bennett and A. L. Hock.

"Synthesis in the thianthren series. Part II." By M. Sen and J. N. Rây.

"Some lactonic esters derived from phenacyl bromide by condensation with ethyl sodiomalonate and analogous substances." By R. M. Rây and J. N. Rây.

"The velocity of decomposition of heterocyclic diazonium salts. Part I. Diazonium salts of the pyrazole and pyrazolone series." By J. Reilly and D. Madden.

"Orientating effects in the diphenyl series." By H. G. Dennett and E. E. Turner.

"The relative directive influence of polar and steric effects on ring closure." By R. W. J. Smith and E. E. Turner.

"The configuration of the ammonium ion." By W. H. Mills and E. H. Warren.

"Symmetrical substitution derivatives of trimethylene bromide and pentamethylene bromide." By W. H. Mills and L. Bains.

"Further studies on a new chlorinating agent preparation of polychloro-derivatives of toluene." By O. Silberrad.

"The equilibrium in the systems aluminium sulphate–copper sulphate–water and aluminium sulphate–ferrous sulphate–water at 25°." By V. J. Occleshaw.

"Reactions of the meso-hydroxyanthrones." By M. A. Matthews.

"The influence of different nuclei on the absorption spectra of substances." By J. E. PURVIS.

"The occurrence of sylvestrene." By B. S. RAO and J. L. SIMONSEN.

"The partial formaldehyde vapour pressures of aqueous solutions of formaldehyde. Part II." By W. LEDBURY and E. W. BLAIR.

"Trypanocidal action and chemical constitution. Part III. Arsinic acids containing the glyoxaline nucleus." By I. E. BALABAN and H. KING.

"The preparation of tertiary arsines by the Friedel-Crafts reaction." By A. F. HUNT and E. E. TURNER.

"Equilibrium in the system : $CH_3COOCH_3+H_2O \rightleftharpoons CH_3OH+CH_3COOH$." By G. J. BURROWS.

"The parachor and chemical constitution. Part III. Orientation isomerism in aromatic compounds." By S. SUGDEN and H. WILKINS.

"The aluminioxalates of some optically active bases." By T. B. CHILD, E. ROBERTS, and E. E. TURNER.

"On the equilibrium between methylformate, methanol and hydrogen, and some related equilibria." By J. A. CHRISTIANSEN.

"Hydrogen electrode studies of the reactions between solutions of salts of weak metallic bases and the acetate, oxalate and tartrate of sodium, with a note on the effect of dextrose on zirconium chloride solution." By H. T. S. BRITTON.

"The conversion of *r*-phenyl-α-naphthyl-glycollic acid into ketones." By A. MCKENZIE and H. J. TATTERSALL.

"Studies of equilibrium in systems of the type $Al_2(SO_4)_3$–M″SO_4–H_2O. Part II. Aluminium sulphate–nickel sulphate–water at 30°." By R. M. CAVEN and T. C. MITCHELL.

"The system silver sulphate–aluminium sulphate–water at 30°." By R. M. CAVEN and T. C. MITCHELL.

"Change of crystal habit of some salts when crystallised from silicic acid gel." By H. A. FELLS and J. B. FIRTH.

"The ionic activity product of water in glycerol–water mixtures." By J. COLVIN.

"2-*m*-Xylidino-5-ethoxy-4 : 5-dihydrothiazole." By V. K. NIMKAR and F. L. PYMAN.

"The change in the absorption spectra of aromatic nitro-compounds in liquid ammonia with time." By W. E. GARNER and H. F. GILLBE.

"Nitrosyl sulphuric acid. Part I." By G. A. ELLIOTT, L. L. KLEIST, and H. W. WEBB.

"The action of acetylenetetrabromide on organic bases." By J. D. FULTON.

"Production of *cyclo*telluripentanedionedichlorides." By G. T. MORGAN (with F. J. CORBY, O. C. ELVINS, E. JONES, R. E. KELLETT, and C. J. A. TAYLOR).

"Interactions of tellurium tetrachloride and monoketones." By G. T. MORGAN and O. C. ELVINS.

"A note on the sulphonation of 4-chloro-phenol." By J. M. GAUNTLETT and S. SMILES.

"Some analogues of adrenalone. Part I." By F. MATTHEWS.

"The relationship between the optical rotatory powers and the relative configurations of optically active compounds. Part II. The relative configurations of the optically active mandelic acids and β-phenyl-lactic acids." By G. W. CLOUGH.

Synthesis of 2 : 3 : 5-trimethyl glucose." By J. C. IRVINE and J. W. H. OLDHAM.

"The oxidation of certain sesquiterpenes with chromyl chloride and chromic acid." By D. T. GIBSON, J. M. ROBERTSON, and J. SWORD.

"Tesla-luminescence spectra. Part VI. Some amino-derivatives." By W. H. MCVICKER, J. K. MARSH, and A. W. STEWART.

"Glyceryl glucoside." By H. S. GILCHRIST and C. B. PURVES.

"A comparison of methods of measuring the polarity of surfaces." By N. K. ADAM, R. S. MORRELL, and R. G. W. NORRISH.

"cyclo*Hexane*spirocyclo*hexane*." By W. S. G. P. NORRIS.

"The effect of heat on chloral hydrate." By J. D. MOUNFIELD and J. K. WOOD.

"The solubilities of sodium, potassium and calcium ferrocyanides. Part I." By M. P. APPLEBEY and M. FARROW.

"Isomeric change of aromatic compounds. Part I. The conversion of diacylanilides into acylaminoketones." By A. W. CHAPMAN.

"Nitrosyl sulphuric acid." By F. J. WILSON and H. W. WEBB.

"The constitution of the metallic ozonides." By E. C. C. BALY and R. W. RIDING.

"The influence of substituents on the stability of Schiff's bases. Part I. Hydrolysis of nitro- and methoxy-benzylidene anilines." By E. M. LANGMAN, W. HEALEY, and P. K. DUTT.

ADDITIONS TO THE LIBRARY.

I. *Donations.*

ABDERHALDEN, EMIL. [Editor.] Handbuch der biologischen Arbeitsmethoden. Abt. I, Chemische Methoden, Teil 6, Heft. iii, Abt. III, Physikalisch-chemische Methoden, Teil A, Heft v. Berlin 1925. pp. [268] + xxiv, [136]. ill. *M.* 12.30, *M.* 5.70. (*Recd.* 12/9/25.) From the Publishers: Herren Urban & Schwarzenberg.

AUSTRALIAN JOURNAL OF EXPERIMENTAL BIOLOGY AND MEDICAL SCIENCE. Vol. I, etc. Adelaide 1924 +. (*Reference.*)
From the Publishers.

BERRY, ARTHUR JOHN. Volumetric analysis: with a chapter on simple gravimetric determinations. 3rd edition. Cambridge 1925. pp. viii + 152. ill. 9*s.* net. (*Recd.* 9/10/25.)
From the Syndics of the Cambridge University Press.

BRUN, P. L'industrie des cyanures. Paris 1925. pp. 470. ill. 20 *fr.* net. (*Recd.* 22/9/25.)
From the Publisher: M. Gaston Doin.

BUNBURY, HUGH MILLS, and DAVIDSON, ALFRED. The industrial applications of coal tar products. London 1925. pp. xii + 284. 42*s.* net. (*Recd.* 7/9/25.)
From the Publishers: Messrs. Ernest Benn.

COHEN, JULIUS BEREND, and RUSTON, ARTHUR G. Smoke: a study of town air. [2nd] edition. London 1925. pp. xii + 108. ill. 8*s.* 6*d.* net. (*Recd.* 14/10/25.)
From the Publishers: Messrs. Edward Arnold & Co.

EASTMAN KODAK COMPANY. Aerial haze and its effect on photography from the air. Rochester, N.Y. 1923. pp. 84. ill. (*Recd.* 16/6/25.) From the Eastman Kodak Company.

GARDNER, WILLIAM. Companion to the first edition of Chemical synonyms and trade names. London 1925. pp. vi + 56. (*Reference.*) 7*s.* 6*d.* net.

From the Publishers: Messrs. Crosby Lockwood & Son.

HAUSBRAND, EUGEN. Principles and practice of industrial distillation. Translated from the 4th German edition by EDWARD HOWARD TRIPP. London 1925. pp. xx + 300. ill. 21*s.* net. (*Recd.* 12/9/25.) From the Publishers: Messrs. Chapman & Hall.

HOLMYARD, ERIC JOHN. Chemistry to the time of Dalton. London 1925. pp. 128. ill. 2*s.* 6*d.* net. (*Recd.* 16/10/25.)

From the Author.

INSTITUTE OF PHYSICAL AND CHEMICAL RESEARCH. Scientific papers. Vol. I, etc. Tokyo 1924 +. (*Reference.*)

From the Institute.

INSTITUTION OF CHEMICAL ENGINEERS. Transactions. Vol. 2, 1924. London [1925]. pp. 110. ill. (*Reference.*)

From the Institution.

JACOBSON, CARL ALFRED. A pronouncing chemical formula speller and contest guide. Baltimore 1925. pp. xviii + 280. (*Reference.*) 20*s.* net.

From the English Agents: Messrs. Baillière, Tindall & Cox.

LEATHES, JOHN BERESFORD, and RAPER, HENRY STANLEY. The fats. 2nd edition. London 1925. pp. viii + 242. 12*s.* 6*d.* net. (*Recd.* 15/10/25.)

From the Publishers: Messrs. Longmans, Green & Co.

LEPESCHKIN, W. Lehrbuch der Pflanzenphysiologie auf physikalisch-chemischer Grundlage. Berlin 1925. pp. vi + 298. ill. *Gm.* 15. (*Recd.* 7/9/25.)

From the Publisher: Herr Julius Springer.

MARTINDALE, WILLIAM HARRISON, and WESTCOTT, WILLIAM WYNN. The extra pharmacopœia. 18th edition. Vol. II. London 1925. pp. xlii + 728. (*Reference.*) 20*s.* net.

From the Publishers: Messrs. H. K. Lewis & Co.

MATAGRIN, A. L'industrie des produits chimiques et ses travailleurs. Paris 1925. pp. xviii + 486. ill. 12 *fr.* net. (*Recd.* 7/9/25.) From the Publisher: M. Gaston Doin.

MEDICAL RESEARCH COUNCIL. Special Report Series, No. 71. The aetiology and pathology of rickets from an experimental point of view. By V. KORENCHEVSKY. London 1922. pp. 172 + 18 plates. 4*s.* net.

—— Special Report Series, No. 77. Studies of rickets in Vienna

1919–22. (Report to the Accessory Food Factors Committee appointed jointly by the Medical Research Council and the Lister Institute.) London 1923. pp. 230 + 13 plates. 7*s*. 6*d*. net.

MEDICAL RESEARCH COUNCIL. Special Report Series, No. 91. An investigation of the Salmonella group, with special reference to food poisoning. By WILLIAM GEORGE SAVAGE and P. BRUCE WHITE. London 1925. pp. 160. 3*s*. 6*d*. net.

—— Special Report Series, No. 92. Food poisoning: a study of 100 recent outbreaks. By WILLIAM GEORGE SAVAGE and P. BRUCE WHITE. London 1925. pp. 112. 2*s*. 6*d*. net.

—— Special Report Series, No. 93. Experimental rickets: the effect of cereals and their interaction with other factors of diet and environment in producing rickets. By EDWARD MELLANBY. London 1925. pp. 66 + 40 plates. 3*s*. 6*d*. net.

From Professor J. C. Drummond.

MEIJER, WILLEM. Pyrazolonen. Groningen 1925. pp. 84. (*Recd*. 16/6/25.) From the Publisher: M. Edzo Venema.

MENSCHUTKIN, BORIS N. A short course of chemistry for technical colleges and universities. Leningrad 1925. pp. 128. [In Russian.] (*Recd*. 12/8/25.) From the Author.

—— M. W. Lomonossow. Moscow 1925. pp. 104. ill. [In Russian.] (*Recd*. 12/8/25.) From the Author.

MENSCHUTKIN, NIKOLAI ALEXANDROVICH. Analytical chemistry. 13th edition. Leningrad 1925. pp. xvi + 420. ill. [In Russian.] (*Recd*. 12/8/25.) From Professor B. N. Menschutkin.

NEDERLANDSCH-INDISCHE APOTHEKERS-VEREENIGING. Pharmaceutisch Tijdschrift voor Nederlandsch-Indië: tijdschrift voor apothekers en apotheekhoudende geneeskundigen. Year I, etc. Weltevreden 1924 +. (*Reference*.) From the Society.

PLIMMER, ROBERT HENRY ADERS, and PLIMMER, VIOLET G. Food and health. London 1925. pp. vi + 64. ill. 3*s*. 6*d*. net. (*Recd*. 15/10/25.) From the Publishers: Messrs. Longmans, Green & Co.

R. STAZIONE SPERIMENTALE PER L'INDUSTRIA DELLE PELLI E DELLE MATERIE CONCIANTI NAPOLI-TORINO. Bolletino Ufficiale. Year I, etc. Torino 1923 +. (*Reference*.) From the Director.

RESEARCH ASSOCIATION OF BRITISH FLOUR-MILLERS. Bulletin. No. 1, etc. London 1924 +. (*Reference*.) From the Director.

ROSS, F. E. The physics of the developed photographic image. Rochester, N.Y. 1924. pp. 218. ill. (*Recd*. 16/6/25.)

From the Eastman Kodak Company.

ROTHAMSTED EXPERIMENTAL STATION. Report 1923–24 with the supplement to the "Guide to the experimental plots" containing the yields per acre, etc. Harpenden 1925. pp. 130. ill. (*Reference*.) 2*s*. 6*d*. net. From the Director.

SOCIETY OF CHEMICAL INDUSTRY. Chemical Engineering Group. Proceedings. Vols. V & VIA 1923–1924. London [1925]. pp. 130. ill. (*Reference.*) 10*s.* 6*d.* net.
From the Chemical Engineering Group.

SPROXTON, FOSTER. Cellulose ester varnishes. London 1925. pp. 178. ill. 15*s.* net. (*Recd.* 15/10/25.) From the Author.

THOMPSON, R. CAMPBELL. On the chemistry of the ancient Assyrians. London 1925. pp. 157 + 6 plates. [In mimeograph form.] 25*s.* net. (*Recd.* 7/9/25.) From the Author.

THOMS, HERMANN. [Editor.] Handbuch der praktischen und wissenschaftlichen Pharmazie. Vol. II, part iii; Vol. III, part iii. Berlin 1925. pp. [384] + viii, [288]. ill. *M.* 14, *M.* 10. (*Recd.* 11/8/25.) From the Publishers: Herren Urban & Schwarzenberg.

ZSIGMONDY, RICHARD. Kolloidchemie. Ein Lehrbuch. 5th edition. I. Allgemeiner Teil. (Chemische Technologie in Einzeldarstellungen.) Leipzig 1925. pp. xii + 246. ill. *Gm.* 11. (*Recd.* 31/7/25.) From the Publisher: Herr Otto Spamer.

II. *By Purchase.*

ALLEN, HERBERT STANLEY. Photo-electricity. 2nd edition. London 1925. pp. xii + 320. ill. 18*s.* net. (*Recd.* 9/10/25.)

ALTERTHUM, HANS. Wolfram: Fortschritte in der Herstellung und Anwendung in den letzten Jahren. Braunschweig 1925. pp. viii + 112. *M.* 4.30. (*Recd.* 19/6/25.)

ARMSBY, HENRY PRENTISS, and MOULTON, C. ROBERT. The animal as a converter of matter and energy: a study of the rôle of live stock in food production. New York 1925. pp. 236. ill. 15*s.* net. (*Recd.* 14/10/25.)

ASSOCIATION OF OFFICIAL AGRICULTURAL CHEMISTS. Official and tentative methods of analysis. 2nd edition. Washington, D.C. 1925. pp. xvi + 536. ill. 27*s.* 6*d.* net. (*Recd.* 14/10/25.)

BAYLISS, SIR WILLIAM MADDOCK. The nature of enzyme action. 5th edition. London 1925. pp. viii + 200. ill. 9*s.* net. (*Recd.* 16/6/25.)

BECQUEREL, JEAN. La radioactivité et les transformations des éléments. Paris 1924. pp. 208. ill. 5 *fr.* (*Recd.* 22/6/25.)

BILLITER, JEAN. Technische Elektrochemie. 2nd edition of Die elektrochemischen Verfahren der chemischen Gross-Industrie. 2nd edition. Vols. I and II. Halle (Saale) 1923–24. pp. viii + 244, viii + 398. ill. (*Recd.* 19/6/25.)

BÖESEKEN, JACOB. The configuration of the saccharides. 2 parts. Translated from the Dutch by SAMUEL COFFEY. Leyden [1923]. pp. vi + 72 + iv, iv + 58 + iv. 10*s.* net. (*Recd.* 16/6/25.)

BROWNING, CARL HAMILTON. [Editor.] Immunochemical studies. London 1925. pp. xiv + 240. 12*s*. 6*d*. net. (*Recd*. 9/10/25.)

CHRISTIANSEN, WALTER G. Organic derivatives of antimony. New York 1925. pp. 230. 15*s*. net. (*Recd*. 9/10/25.)

CLÉMENT, LOUIS, and RIVIÈRE, C. Matières plastiques; soies artificielles. Paris 1924. pp. 528. ill. 55 *fr*. net. (*Recd*. 22/7/25.)

COUNCELL, R. W. Apologia alchymiæ: a re-statement of alchemy. London 1925. pp. xii + 88. 5*s*. net. (*Recd*. 16/6/25.)

CURIE, MADAME PIERRE. L'isotopie et les éléments isotopes. Paris 1924. pp. 210. ill. 22.50 *fr*. (*Recd*. 22/6/25.)

DIXON, WALTER ERNEST. A manual of pharmacology. 6th edition. London 1925. pp. xii + 478. ill. 18*s*. net. (*Recd*. 9/10/25.)

DODDS, EDWARD CHARLES, and DICKENS, FRANK. The chemical and physiological properties of the internal secretions. London 1925. pp. xiv + 214. ill. 8*s*. 6*d*. net. (*Recd*. 9/10/25.)

DUBOVITZ, HUGO. Chemische Betriebskontrolle in der Fettindustrie. Berlin 1925. pp. vi + 136. ill. *M*. 6.90. (*Recd*. 26/6/25.)

ELLIOT, CYRIL. Distillation in practice. London 1925. pp. 188. ill. 6*s*. net. (*Recd*. 14/10/25.)

FEUERFEST. Zeitschrift für Gewinnung, Bearbeitung, Prüfung und Verwendung feuerfester Stoffe. Year I, etc. Leipzig 1925 +. (*Reference*.)

GILLETT, HORACE WADSWORTH, and MACK, E. L. Molybdenum, cerium and related alloy steels. New York 1925. pp. 300. ill. 20*s*. net. (*Recd*. 12/6/25.)

GOODWIN, HAROLD. Autoclaves and high pressure work. London 1925. pp. 166. ill. 6*s*. net. (*Recd*. 14/10/25.)

GURWITSCH, LEO. Wissenschaftliche Grundlagen der Erdölverarbeitung. 2nd edition. Berlin 1924. pp. vi + 400. ill. *M*. 18 net. (*Recd*. 22/7/25.)

HAMILTON, ALICE. Industrial poisons in the United States. New York 1925. pp. xii + 590. 21*s*. net. (*Recd*. 9/10/25.)

HISTORY OF THE GREAT WAR. Medical Services. Vol. II. Including . . . gas warfare, and gas poisoning in tanks and mines. Edited by SIR WILLIAM GRANT MACPHERSON [and others]. London 1923. pp. viii + 622. ill. 25*s*. net. (*Recd*. 20/6/25.)

HOUBEN, JOSEF. Die Methoden der organischen Chemie. 3rd edition. Vol. I. Allgemeiner Teil. Leipzig 1925. pp. xxviii + 1340. ill. (*Reference*.) *M*. 75.

KERSHAW, G. BERTRAM. Sewage purification and disposal. 2nd

edition. Cambridge 1925. pp. xii + 364. ill. 18*s*. net. (*Recd.* 9/10/25.)

KERSHAW, JOHN BAKER CANNINGTON. Fuel economy and smoke prevention: being the 3rd edition of "Smoke prevention and fuel economy" by W. H. BOOTH and J. B. C. KERSHAW. London 1925. pp. xiv + 268. ill. 16*s*. net. (*Recd.* 9/10/25.)

LANGTON, HAROLD MCKEE. Blacks and pitches. London 1925. pp. 179. ill. 15*s*. net. (*Recd.* 14/10/25).

LE BLANC, MAX. Lehrbuch der Elektrochemie. 11th and 12th edition. Leipzig 1925. pp. viii + 391. ill. *M*. 13. (*Recd.* 22/6/25.)

LEWIS, WILLIAM CUDMORE MCCULLAGH. A system of physical chemistry. 4th edition. Vol. II. Thermodynamics. London 1925. pp. viii + 490. ill. 15*s*. net. (*Recd.* 26/6/25.)

MCKEE, RALPH H. [and others]. Shale oil. New York 1925. pp. 326. ill. 22*s*. 6*d*. net. (*Recd.* 9/10/25.)

NAMETKIN, S. Die Umlagerung alizyklischer Kerne ineinander. (Sammlung, Vol. XXVIII.) Stuttgart 1925.

PATTEN, NATHAN VAN. Bibliography of the corrosion of metals and its prevention. Kingston, Canada 1924. pp. iv + 186. (*Reference.*) 20*s*. net.

POGGENDORFF, JOHANN CHRISTIAN. Biographisch-literarisches Handwörterbuch. Vol. V. 1904 to 1922. Edited by P. WEINMEISTER. Part i. Leipzig 1925. pp. iv + 696. (*Reference.*) *M*. 60.

PRINGSHEIM, HANS, with the collaboration of JESAIA LEIBOWITZ. Zuckerchemie. Leipzig 1925. pp. xii + 322. *M*. 18. (*Recd.* 19/6/25.)

SMITH, SYDNEY. Forensic medicine: a text-book for students and practitioners. London 1925. pp. xiv + 498. ill. (*Reference.*) 21*s*. net.

TAMMANN, GUSTAV. A text-book of metallography: chemistry and physics of the metals and their alloys. Translated from the 3rd German edition . . . by REGINALD SCOTT DEAN and LESLIE GERALD SWENSON. New York 1925. pp. ii + 388. ill. 26*s*. net. (*Recd.* 16/6/25.)

[UNITED STATES] NATIONAL RESEARCH COUNCIL. *Division of Engineering and Industrial Research.* Marine structures, their deterioration and preservation: report of the Committee on Marine Piling Investigations. By WILLIAM G. ATWOOD and A. A. JOHNSON [and others]. Washington, D.C. 1924. pp. viii + 534. ill. 31*s*. 6*d*. net. (*Recd.* 12/6/25.)

WORLD LIST OF SCIENTIFIC PERIODICALS published in the years 1900–1921. London 1925. pp. xii + 499. (Two copies.)

III. *Pamphlets.*

(a) *From Professor P. Phillips Bedson.*

AUSTIN, LEONARD. Demonstration of rescue-apparatus, Felling, August 31st, 1907. (From the *Trans. Inst. Mining Engineers*, 1908.) ill.

FERNANDES, FRANCIS VITO. The Indian school of Chemistry. The researches of Professor Ray and his pupils at Presidency College. (From the *Presidency College Magazine*, 1915, **1**.)

FRENCH COMMISSION ON THE USE OF EXPLOSIVES IN THE PRESENCE OF FIRE-DAMP IN MINES. Report. Translated by W. J. BIRD and M. WALTON BROWN. 3 parts. Newcastle-upon-Tyne 1890–91. pp. 164. ill.

MOREWOOD, A. PALMER. Shaw's gas tester, for detecting the presence of small percentages of gas in colliery workings. London 1896. pp. 18. ill.

NORTH OF ENGLAND INSTITUTE OF MINING AND MECHANICAL ENGINEERS. Report of the Committee appointed to enquire into the explosion of an air receiver at Ryhope Colliery. (From the *Trans. N. England Inst. Min. & Mech. Eng.*, 1888, **37**.) ill.

SMYTHE, JOHN ARMSTRONG. Two newly-discovered whin-dykes on the coast of Northumberland. (From the *Trans. Nat. Hist. Soc. Northumberland*, 1914, N.S. **4**).

—— On nitrosopinene. London 1898. pp. 19.

TROBRIDGE, FREDERICK GEORGE. Über die Ester- und Amid-Sauren der Itaconsäure. Beuel a. Rh. 1910. pp. 36.

(b) *Miscellaneous.*

ANDERSON, L. A. P., HOWARD, ALBERT, and SIMONSEN, JOHN LIONEL. Studies on lathyrism. I. (From the *Indian J. Med. Research*, 1925, **12**.)

GORTNER, ROSS AIKEN, and HOFFMAN, WALTER FRED. Quantitative estimation of chlorides and sulphates in expressed plant tissue fluids. (From the *Bot. Gaz.*, 1924, **77**.)

HENDRICK, JAMES. Some characters of Scottish soils. (From the *Trans. Highland & Agric. Soc. of Scotland*, 1925.)

MASON, FREDERICK ALFRED. An introduction to the literature of chemistry for senior students and research chemists. Oxford 1925. pp. 42.

MILLER, LEWIS B. Adsorption by aluminium hydrate considered as a solid solution phenomenon. (From the *U.S. Public Health Reports*, 1924, **39**.)

MINES DEPARTMENT. *Safety in Mines Research Board.* Second Annual report, 1923, etc. London 1924 +.

—— Paper No. 7. Explosives in Mines Research Committee. Second report 1924, etc. London 1925 +.

—— Paper No. 8. The ignition of fire-damp. By HUBERT FRANK COWARD and RICHARD VERNON WHEELER. London 1925. pp. 25. ill.

—— Paper No. 9. The lag on ignition of firedamp. By C. A. NAYLOR and RICHARD VERNON WHEELER. London 1925. pp. 16. ill.

—— Paper No. 10. Firedamp explosions within closed vessels. The effects of turbulence. By G. B. MAXWELL and RICHARD VERNON WHEELER. London 1925. pp. 12. ill.

MINISTRY OF HEALTH. Final Report of the Departmental Committee on the use of preservatives and colouring matters in food. London 1924. pp. 84.

MONIER-WILLIAMS, GORDON WICKHAM. The solubility of glazes and enamels used in cooking utensils. (*Ministry of Health Reports on Public Health and Medical Subjects.* No. 29.) London 1925. pp. iv + 17.

NATIONAL ASSOCIATION OF MASTER BAKERS, CONFECTIONERS AND CATERERS. Reports on research at the National Bakery School (Borough Polytechnic Institute), London, conducted by CHARLES DORÉE and JOHN KIRKLAND. (From the *Nat. Assoc. Review*, 1925.)

NATIONAL PHYSICAL LABORATORY. *Metrology Department.* Verification of weights: testing of balances: determination of densities. 1925. pp. 28.

PERKIN, FREDERICK MOLLWO. Recent progress in the peat problem. Paper read before the British Association at Southampton on August 27th, 1925. London 1925. pp. 24. ill.

PUIG, P. IGNACIO. Teoria de las valencias positivas y negativas. Barcelona 1924. pp. 31. ill.

PUIGGARI, HUGO. Fenómenos de transporte eléctrico en un hidrosol de oxido férrico. Trabajo presentado al 1er Congreso Sudamericano de Quimica. Buenos Aires 1924. pp. 11.

RADIUM. Le vingt-cinquième anniversaire de la découverte du radium (1898–1923). [Paris n.d.] pp. 86.

RAU, MADYAR GOPAL. The constituents of some Indian essential oils. Part XVI. (From the *Indian Forest Records*, 1924, **11**.)

RAU, MADYAR GOPAL and SIMONSEN, JOHN LIONEL. The constituents of some Indian essential oils. Part XVII. (From the *Indian Forest Records*, 1925, **11**.)

PROCEEDINGS

OF THE

CHEMICAL SOCIETY.

Ordinary Scientific Meeting, Thursday, November 5th, 1925, at 8 p.m., Dr. ARTHUR W. CROSSLEY, C.M.G., C.B.E., D.Sc., F.R.S., President, in the Chair.

The PRESIDENT referred to the loss sustained by the Society, through death, of the following Fellows :

	Elected.	Died.
John Young Buchanan	June 21st, 1877.	Oct. 16th.
Harold James Cross	Feb. 15th, 1917.	Oct. 17th.
Francis Jones.....	Dec. 4th, 1873.	Oct. 22nd.
Charles Etty Potter	Dec. 5th, 1912.	Sept. 13th.

The PRESIDENT announced that Professors C. S. Gibson, G. T. Morgan, J. F. Thorpe, and W. P. Wynne, have been appointed by the Council to represent the Society on the Bureau of Chemical Abstracts, and that Professors T. M. Lowry, J. W. McBain, and J. C. Phillip will represent the Society on the Editorial Board of the Journal of Physical Chemistry, together with Professor F. G Donnan, appointed by the Faraday Society.

Certificates were read for the first time in favour of :

Harold Frederic Betts, B.Sc., 17, The Broadway, Broadstairs.
Edward Britnell, B.Sc., 9, Osterley Avenue, Isleworth.
Reginald John Bromfield, 141, Constantine Road, N.W. 3.
Francis Hereward Burstall, B.Sc., 12, Adelaide Road, Teddington.
Archer John William Butterfield, 163, Northumberland Park, N. 17.
John William Corran, B.Sc., Ph.D., A.I.C., Research Laboratory, Carrow Works, Norwich.
John Harold Cottier, 52, Aspen Grove, Lodge Lane, Liverpool.
John Horsfall Dyde, 18, Dean Road, Scarborough.
George Malcolm Dyson, B.A., B.Sc., Ph.D., 36, Hillsborough Road, E. Dulwich, S.E. 22.
Alfred Eccles, B.Sc., 18, Cambrian Terrace, Holbeck, Leeds.
George Albert Elliott, M.Sc., 263, Kennington Road, S.E. 11.
Eric Bertram Evans, B.Sc., 2, Boxmoor Terrace, Southchurch, Southend.
Elinor Katharine Ewbank, B.A., 22, Park Crescent, Oxford.

Elizabeth Monica Openshaw Farrow, M.A., 37, Chalfont Road, Oxford.
Oliver Free, B.A., The Lodge, Mansfield College, Oxford.
William Marshall Freeman, 1, Temple Gardens, Temple, E.C. 4.
Eva Florence Gee, The Station, L.N.E.R., Howsham, Lincoln.
George Vincent Hall, B.Sc., 6, Borough Road, Bridlington.
William Rowan Hare, 220, Eastfield, Peterborough.
Walter Healey, 28, Gooder Lane, Brighouse.
Thomas Henderson, M.C., M.A., B.Sc., Guildford Grammar School, West Australia.
Syed Husain, M.Sc., 112, Gower Street, W.C. 1.
Gilbert Jessop, M.Sc., Ph.D., 453, Glossop Road, Sheffield.
Brian Charles Lavers Kemp, B.A., Wellington College, Berks.
Banarsi Das Laroia, B.A., B.Sc., 3, Oxford Road, Teddington.
John Joseph Lennon, M.Sc., 6, Bartlemas Road, Oxford.
Ivan Roy McHaffie, B.A., M.Sc., 37, King Henry's Road, N.W. 3.
Neil McLean, M.A., B.Sc., 127, Blenheim Place, Aberdeen.
Leslie George Manchester, B.Sc., 557, Green Lanes, Hornsey, N. 8.
William Alfred Nottage Markwell, 26, Huntsmoor Road, S.W. 18.
Charles Henry Lawrence Miller, 50, Rowden Road, Beckenham.
Horace Winston Palmer, B.Sc., 15, Hollingdean Terrace, Brighton.
Austin McDowell Patterson, Antioch College, Yellow Springs, Ohio, U.S.A.
Ernest Phillis, B.Sc., 22, Fairford Terrace, Dewsbury Road, Leeds.
Jonathan Pollitt, B.A., 17, Caversham Avenue, Palmers Green, N. 13.
Charles Raymond Porter, M.Sc., A.I.C., 126, Linden Road, Bournville, Birmingham.
Evan Emrys Price, B.Sc., Rock House, Heathfield, Swansea.
Rose Rachel Sass, B.Sc., Newnham College, Cambridge.
Albert Sciver, B.Sc., A.I.C., 84, Vineyard Hill, Wimbledon Park, S.W. 19.
Frederick Francis Percival Smith, B.A., B.Sc., Peterhouse, Cambridge.
Robert Frederick Smith, 254, Higham Hill Road, Walthamstow, E. 17.
William Ernest Soper, B.Sc., 50, Aislibie Road, Lee, S.E. 12.
Herbert Kenneth Southern, B.Sc., Government Laboratory, Strand, W.C. 2.
Frank Harland Swire, 152, Queen's Road, Halifax.
Harold James Tattersall, B.Sc., Ph.D., 141, Thorold Road, Ilford.
Elvera Annie Tricker, 319, Norwich Road, Ipswich.
Norman Leopold Tyler, 9, St. Paul's Gardens, Spennymoor.
Herbert Ward Vernon, B.Sc. 245, Albert Road, N. 22.
Ewart Harrod Williams, B.Sc., A.I.C., 31, Thornsbeach Road, Catford, S.E. 6.
Gwyn Williams, B.Sc., Cae Ffynnon, Llandudno Junction.
John Laurence Wiltshire, B.Sc., 36, Fordel Road, Catford, S.E. 6.
Wilfred Fisher Wyatt, M.Sc., North Anston, Nr. Sheffield.

The following were formally admitted Fellows of the Chemical Society: W. J. V. Ward, H. F. Halliwell, R. J. W. Le Fèvre, I. J. Faulkner, J. Thurgood, and T. W. Jones.

The following papers were read:

"Further studies on a new chlorinating agent. Preparation of polychloro-derivatives of toluene." By O. Silberrad.

"The configuration of the ammonium ion." By W. H. Mills and E. H. Warren.

The following paper was taken as read :

" Ring-chain tautomerism. Part XV. The phenol-succineins and -glutareins." By S. DUTT.

Ordinary Scientific Meeting, Thursday, November 19th, 1925 at 8 p.m., Professor W. P. WYNNE, D.Sc., F.R.S., Vice-President in the Chair.

The CHAIRMAN referred to the loss sustained by the Society, through death, of the following Fellows :

	Elected.	Died.
John Lloyd T. Jones	Feb. 7th, 1901.	Nov. 12th.
Frank George Pope	Feb. 18th, 1909.	Oct. 29th.
Robert Llewellyn Taylor	Jan. 15th, 1874.	Nov. 8th.

The CHAIRMAN announced that :

1. The Council has decided that the next Annual General Meeting and Dinner to take place on Thursday, March 25th, 1926, shall be held in Manchester. A local Sub-Committee has been appointed to make arrangements and full particulars will be announced later.

2. An Informal Meeting will be held in the Rooms of the Society on Thursday, December 17th, immediately after the conclusion of the formal business of the Ordinary Scientific Meeting at 8 p.m. Light refreshments will be provided, and smoking will be permitted, except on the Library Floor. The Council will welcome assistance from Fellows who can add to the interest of the Meeting by showing experiments or exhibiting apparatus, and those able to do so are requested to communicate with the Assistant Secretary not later than Monday, December 7th.

The following were formally admitted Fellows of the Chemical Society : Cyril C. Harris, John S. Carter, and T. H. Clare.

Certificates were read for the first time in favour of :

William Blakey, jun., B.A., 14, Marshall Road, Cambridge.
Herbert Clayton, M.A., B.Sc., The Dyson Perrins Laboratory, South Parks Road, Oxford.
John Charles Forsyth, 62, Worcester Street, Christchurch, New Zealand.
Ankarath Sankunni Mannadi Nayar, M.B., B.S., Ph.D., The Medical College, Madras.
William Bennett Price, B.Sc., The Laurels, Woolwich Road, Belvedere.
Madhavlal Sukhlal Shah, M.Sc., 22, Oxford Road, Putney, S.W. 15.
George Ernest Thompson, 7, Campbell Road, Bow, E. 3.
Bernard William Town, B.Sc., A.R.C.S., 79, The Grove, Hammersmith, W. 6.
Victor Martin Trikojus, B.Sc., Queen's College, Oxford.
Henry Woolf, P.O. Box 14, Broken Hill, Northern Rhodesia.

The following Certificate has been authorised by the Council for presentation to ballot under Bye-Law I (2):

Edgar Calvin Le Roy Miller, M.D., Medical College of Virginia, Richmond Va., U.S.A.

The following papers were read:

"The constitution of the metallic ozonides." By E. C. C. Baly and R. W. Riding.

"Studies of dynamic isomerism. Part XX. Amphoteric solvents as catalysts for the mutarotation of the sugars." By T. M. Lowry and I. J. Faulkner.

"Studies of valency. Part V. Absorption spectra of halogen and sulphonic derivatives of camphor. Origin of the ketonic absorption band." By T. M. Lowry and G. Owen.

"Studies of valency. Part VI. General and selective absorption of halogen derivatives of methane. The origin of general absorption." By T. M. Lowry and R. R. Sass.

The following paper was taken as read:

"Studies of valency. Part VII. Surface polarity and the reaction of ethylene and chlorine. The effect of the adsorbed water layer." By R. G. W. Norrish and G. G. Jones.

List of papers, or abstracts thereof, received between October 16th and November 19th, 1925. (This list does not include the titles of papers which have been read at an Ordinary Scientific Meeting, or which have appeared in the Journal.)

"Polymerisation of β-glucosan. The constitution of synthetic dextrins." By J. C. Irvine and J. W. H. Oldham.

"The action of mercurous nitrate on chloroauric acid." By W. B. Pollard.

"The freezing of inorganic hydrogels." By J. R. I. Hepburn.

"The bromination of some 5-substituted 1-phenylbenzthiazoles." By R. F. Hunter.

"Studies on the dependence of optical rotatory power on chemical constitution. Part VI. Rotatory powers of phenyl, *o*-, *m*-, *p*-tolyl and β-naphthyl derivatives of *d*-camphorimide and *d*-camphoramic acid." By B. K. Singh and A. N. Puri.

"Transformations of the sugar nitrates." By J. W. H. Oldham.

"Studies in colour and constitution. Part I. The positional bathochromic influence of the methylthiol group, alone, and in conjunction with the methoxy-group." By H. H. Hodgson and F. W. Handley.

"The photochemical oxidation of hydriodic acid in ultra-violet light. Part I." By T. MOORE.

"Ring-chain tautomerism. Part XVII. Instances showing how glutaric derivatives can simulate succinic compounds." By S. DUTT.

"A theory of colour on the basis of molecular strain. The effect of chromophoric superposition." By S. DUTT.

"The influence of the intensity of illumination on the velocity of photochemical changes." By F. BRIERS, D. L. CHAPMAN, and E. WALTERS.

"The salting-out effect. The influence of electrolytes on the solubility of iodine in water." J. S. CARTER.

"Germanium. Part II. Germanium tetrachloride and its ammonia compounds." By W. PUGH and J. S. THOMAS.

"The action of alcoholic soda and potash upon chloronitrobenzene." By D. H. RICHARDSON.

"The partial pressures of aqueous ethyl alcohol." By H. J. E. DOBSON.

"A comparison of some of the physical properties of the alkali cyanates and azides." By J. A. CRANSTON and A. Y. LIVINGSTONE.

"Reactions for nitrites." By B. C. MCEWEN.

"Lead dihydride and lead tetrahydride." By E. J. WEEKS.

"Some reactions of organic thiosulphates." By H. B. FOOTNER and S. SMILES.

"Air oxidation of titanous and vanadous sulphates." By A. S. RUSSELL.

"Complex formation in lead nitrate solutions. Part II. The quaternary system potassium nitrate–lead nitrate–barium nitrate–water." By S. GLASSTONE and E. J. RIGGS.

"Polymerisation of acetone by calcium carbide." By T. HOPKINS.

"Action of zinc alkyl halides on nitric esters." By T. HOPKINS.

"Observations on the Claisen reaction." By G. T. MORGAN and E. HOLMES.

"The specific heats of hydrocyanic acid. A reply." By E. H. INGOLD.

"The relation of homogeneous to catalysed reactions. The catalytic decomposition of hydrogen iodide on the surface of platinum." By C. N. HINSHELWOOD and R. E. BURK.

"The action of hydrogen fluoride on compounds of selenium and tellurium. Part II. Tellurium dioxide." By E. B. R. PRIDEAUX and J. O'N. MILLOTT.

"Halogenation of 2 : 6-dimethylbenzbisthiazole and of 2 : 4-diphenyl-3 : 5-diphenyliminotetrahydro-1 : 2 : 4-thiodiazole." By R. F. HUNTER.

*

"The reaction between hydroxylamine and ferric chloride." By A. D. MITCHELL.

"The equilibria underlying the soap-boiling processes. The system potassium oleate–potassium chloride–water." By J. W. MCBAIN and W. J. ELFORD.

"The solubility of sodium iodide in ethyl alcohol." By F. E. KING and J. R. PARTINGTON.

"Iodination in the carbazole series." By S. H. TUCKER.

"The chemistry of the caryophyllene series. Part I." G. G. HENDERSON, J. M. ROBERTSON, and (in part) C. A. KERR.

"On the Budde effect in bromine. Part I. The photoactive constituent in wet bromine." By B. LEWIS and E. K. RIDEAL.

"On the Budde effect in bromine. Part II. The kinetics of the reaction and the light absorption of wet and dry bromine." By B. LEWIS and E. K. RIDEAL.

"The constitution of the benzene nucleus." By B. C. MCEWEN.

"Keto-enol isomerism of ethylenebisacetylacetone." By G. T. MORGAN and C. J. A. TAYLOR.

"A buffer mixture for the alkaline range of hydrogen-ion concentration determinations." By W. R. G. ATKINS and C. F. A. PANTIN.

"The influence of carbon rings on the velocity of reactions involving their side-chains. Part I. The hydrolysis of cyclic and open-chain malonic esters." By R. GANE and C. K. INGOLD.

"The condensations of 3-bromo-, and 3-nitro-*p*-dimethylaminobenzaldehydes with ethyl acetoacetate and ammonia." By L. E. HINKEL and W. R. MADEL.

"The replacement of calcium carbonate by iron pyrites in nature." By C. O. HARVEY.

"A revision of the structural formula of glucose." By W. CHARLTON, W. N. HAWORTH, and S. PEAT.

CERTIFICATES OF CANDIDATES FOR ELECTION AT THE BALLOT TO BE HELD AT THE ORDINARY SCIENTIFIC MEETING ON THURSDAY, DECEMBER 3RD, 1925.

ANDREW, ROBERT LESLIE, Dominion Laboratory, Wellington, New Zealand. British (by birth). Analyst. Nineteen years' experience in Dominion Laboratory, N.Z., now senior assistant in charge of Food and Drugs work. Published work: "The Colorimetric Estimation of Lead in Cream of Tartar," *Analyst*, 1924, p. 129. "The Cryoscopic Method for the Detection of Added Water in Milk" (appendix to 50th Annual Report, Dominion Laboratory). (*Signed by*) J. S. Maclaurin, P. W. Robertson, K. M. Griffin.

BAISSAC, LOUIS, Curepipe Road, Mauritius (Indian Ocean). British. Sugar Technologist, Department of Agriculture, Réduit, Mauritius. Lecturer

in Sugar Technology, College of Agriculture, Réduit, Mauritius. (*Signed by*) James P. Ogilvie, H. Tempany, W. H. Edwards.

BARKER, WILLIAM FRANCIS, Rhodes University College, Grahamstown, S. Africa. Professor of Chemistry. Ph.D. (Liverpool). (*Signed by*) I. M. Heilbron, E. C. C. Baly, R. A. Morton.

BASDEN, RALPH, 11, Ada St., Hamilton, Newcastle, N.S.W. Teacher of Chemistry. I have been engaged for four years as Teacher of Science at Sydney Grammar School; two years Teacher of Organic and Physical Chemistry at Newcastle Technical College, and four years in Manufacturing and Analytical Chemistry. (*Signed by*) A. R. Penfold, Robt. Grant, Fred J. Berry, Richard W. Challinor.

BELL, FRANK, 11, Edwy Parade, Gloucester. British. Student. Research student at Battersea Polytechnic. (*Signed by*) J. Kenyon, F. C. Ray, Henry Phillips, A. Houssa, Harold Hunter, P. W. B. Harrison, S. Greenberg.

BENNETT, ARTHUR NEVILLE COPNALL, 27, Dale Rd., Luton. British. Research Chemist to B. Laporte, Ltd., Luton. B.Sc. (Hons.) London. Have done research under Prof. Donnan at University College, and hope to publish shortly. (*Signed by*) W. E. Garner, D. McKie, Thomas Iredale.

BETTS, HAROLD FREDERICK, 17, The Broadway, Broadstairs, Kent. British. Research Student, East London College (Univ. of London). B.Sc. (Lond.), 2nd Class Hons. Chemistry. (*Signed by*) J. R. Partington, D. C. Jones, E. E. Turner.

BIRD, JOHN CECIL, 72, Dyne Rd., Kilburn, London, N.W. 6. British. Research and Works Chemist. B.Sc. (London), A.I.C., Associate of Univ. College of Nottingham. Science Master, Grammar School, Daventry. Chemist to Messrs. L. B. Holliday & Co., Ltd., Huddersfield. Chief Chemist and Works Manager to J. W. Drysdale & Co., London. Chemist to Messrs. Intermediates and Explosives, Ltd. (Bolckow, Vaughan & Co.), Co. Durham. Chemist to Messrs. Crookes Laboratories (British Colloids, Ltd., London). Investigation with Prof. H. H. Hodgson, M.A., into Absorption Spectra of Standard Dyestuffs (Huddersfield). (*Signed by*) Herbert Henry Hodgson, F. S. Kipping, E. R. Trotman.

BIRKETT, LIONEL CHRISTOPHER WILLIAM, Moor House, North Rd., Spennymoor, Co. Durham. British. Analytical Chemist on Coke Oven and Bye-products Plant. 5½ years' experience in Ironworks and Coke Oven laboratories. B.Sc. (3rd Class Hons.) after 3 years' study at Armstrong College, Newcastle-on-Tyne. (*Signed by*) W. N. Haworth, G. C. Leitch, H. V. A. Briscoe.

BOYD, JAMES, P.O. Box 1162, Johannesburg, S. Africa. British. Chief Examiner of Mine Air, Chamber of Mines, Johannesburg (and Assistant to General Manager, Chamber of Mines). F.I.C., A.R.T.C. (Glasgow). Assistant to Professor of Chemistry, Royal Technical College, Glasgow, 1908–11. Chemist, Goldfields Lab., Transvaal, 1912–13. Chief Examiner of Mine Air, Chamber of Mines, Johannesburg, 1914 to date. Author of various reports on Dust in Mine Air and Methods of investigating same (published in "Chamber of Mines Annual Reports," and for circulation to the mines of the Rand). Student, Royal Technical College, Glasgow, 1904–08. (*Signed by*) G. G. Henderson, Thomas Gray, F. J. Wilson.

BRADHURST, FRANK SYMONDS, Bondi, Sydney, and c/o Holbrooks Ltd., Danks St., Waterloo, Sydney. Chief Chemist and Factory Manager. Matriculated from Sydney High School at Leaving Certificate Examination; obtained Scholarship available at the Sydney Technical College. Here I obtained the Honours Diploma with College Medal for year in Organic Chemistry, thereby becoming an Associate of the Sydney Technical College (A.S.T.C. Chem.).

Associate of the Australian Chemical Institute (A.A.C.I.). Chemist at Stedman-Hendersons, Ltd., Sweet Manufacturers, for 2½ years, then at Holbrooks (Australasia), Ltd., of Sydney, for 3 years, where I now hold the above position. I desire admission to the Chemical Society in order to keep in touch with modern research in the field of Food Analysis, and Food Manufacture. (*Signed by*) Richard W. Challinor, Fred J. Berry, Robert Grant, Arthur R. Penfold, S. E. Sibley.

BRITNELL, EDWARD, 9, Osterley Av., Isleworth, Middlesex. English. Chemist. B.Sc. (Honours Chemistry), London, July 1925. Assistant for 3 years to G. N. Huntly, 325, Kennington Rd., S.E. Assistant for 1½ years to G. T. Holloway & Co., 13, Emmett St., Limehouse. (*Signed by*) William G. Wagner, G. Nevill Huntly, Herbert F. Stephenson.

BROMFIELD, REGINALD JOHN, 141, Constantine Rd., Hampstead, N.W. 3. English. Assistant to Biochemist, The Hospital for Sick Children, Great Ormond St., W.C. For three years laboratory assistant at University College, London, under Prof. F. G. Donnan and Prof. N. Collie. For one year Acting Biochemist to Children's Hospital, Gt. Ormond St. For past two years Biochemical assistant, Hospital for Sick Children, Great Ormond St. Desire to become a member in order to receive the Journal and to keep in touch with current chemical literature, together with access to Library. (*Signed by*) J. N. Collie, Henry Terrey, Fred J. Kettel, J. Wicliffe Peck.

BURSTALL, FRANCIS HEREWARD, 12, Adelaide Road, Teddington, Middlesex. British. Research Chemist. D.S.I.R. Chemical Research Laboratory, Teddington. 1st Class Honours B.Sc., Birmingham University. (*Signed by*) G. T. Morgan, E. Holmes, C. E. Wood.

BUTTERFIELD, ARCHER JOHN WILLIAM, 163, Northumberland Park, Tottenham, N. 17. English. Articled Pupil in Engineering. Is desirous of keeping in touch with progress in the Science of Chemistry by attending the meetings and receiving the publications of the Society. (*Signed by*) W. J. A. Butterfield, Ernest M. Hawkins, E. R. Bolton.

CARLILE, JOHN HILDRED GEORGE, 29, Orlando Rd., Clapham, S.W. 4. British. Chemical Research Student, Royal College of Science. A.R.C.Sc., B.Sc. (*Signed by*) H. J. T. Ellingham, James C. Philip, H. F. Harwood.

CHALK, LESLIE JAMES, 14, Shrubbery Rd., Southall, Middx. Student (East London College). B.Sc., 1st Class Hons. in Chemistry. J. R. Partington, E. E. Turner, Elwyn Roberts.

CHARAN, RAMA, Allahabad, India. Indian (British). Glass Technologist. Govt. of India State Technical Scholar, B.Sc. from Allahabad University, 1922. Subjects: Maths., Physics, Chemistry, and English. B.Sc. Tech. from Sheffield University, 1924. Subjects: Glass Technology, Fuel, Refractory Materials, Geology and Mineralogy of Glassmaking Materials. For one year after graduation did research work on glasses containing more than one alkaline oxide and silica-lime. (*Signed by*) W. E. S. Turner, C. J. Peddle, F. G. Tryhorn.

CORRAN, JOHN WILLIAM, Research Laboratory, Carrow Works, Norwich. British. Physical and Biochemist. B.Sc. (Liv.), 1st Class Hons. Chem., 1921; Ph.D. (Liv.), 1923; A.I.C. Two years Research Physical Chemistry under Prof. W. C. M. Lewis; two years as physical and biochemist to Liverpool Cancer Research Committee. Publications: *J. Amer. Chem. Soc.*, 1922, **44**, 1673; 1923, **45**, 1627. *Biochem. J.*, 1924, **18**, 1358, 1364. (*Signed by*) W. C. M. Lewis, E. C. C. Baly, E. Morrison, Leslie J. Harris.

COTTIER, JOHN HAROLD, 52, Aspen Grove, Lodge Lane, Liverpool. British. Certificated School-teacher; formerly a student of Sheffield University. I

wish to obtain the Fellowship of the Society in order to receive the Journal and Abstracts, and thus keep in touch with advances in Chemistry. (*Signed by*) W. P. Wynne, F. G. Tryhorn, E. G. Turner, D. M. Bennett.

CROWTHER, EDWARD MORTIMER, Rothamsted Exptl. Station, and Bourtree, 24, Clarence Road, Harpenden, Herts. British. Assistant Physical Chemist and "Empire Cotton Growing Corporation," Soil Physicist, Rothamsted Exptl. Station. D.Sc. (Leeds), F.I.C., A.Inst.P. Publications on Physical Chemistry of Soils. *Journ. Agric. Sci.*, 1925, **15**, 201–255, 300–302, 303–306; *Trans. Faraday Soc.*, 1922, **17**, 317–321. Conjointly: *Journ. Agric. Sci.*, 1924, **14**, 221–231; 1925, **15**, 68–88; *Proc. Royal Soc.*, 1925, **106A**, 33–51, 215–222, 233–242; *Annals of Applied Biology*, 1925, **12**, 152–190. (*Signed by*) E. J. Russell, H. J. Page, C. T. Gimingham.

DICKINSON, FRANK EDWIN, Research Establishment, Sutton Oak, St. Helens, Lancs. British. A/g Superintendent, The Research Establishment, Sutton Oak, St. Helens, Lancs. Actively engaged in Chemical Industry as Analytical and Research Chemist and as Assistant Manager and Manager of Chemical Works for past fourteen years. Educated at King Edward's School, Stratford-on-Avon, and University of Birmingham. No papers published as all work of secret nature or commercial value. (*Signed by*) J. Davidson Pratt, E. Wheeler, Francis H. Carr.

DOLPHIN, JOSEPH RAYMOND, Chemical Department, University Rd., Edgbaston, Birmingham. British. Research Student. Pass B.Sc. Birmingham, 1st Class, 1923; Honours B.Sc. Birmingham, 1st Class, 1924. Research Student under Professor Morgan, O.B.E., D.Sc., F.R.S., from 1924–25 to become Research Chemist at J. A. Crabtree & Co., Ltd., Walsall, in Sept. 1925. (*Signed by*) G. T. Morgan, C. E. Wood, E. Ashley Cooper.

DONOVAN, WILLIAM, Dominion Laboratory, Wellington, New Zealand. British. Analyst, Dominion Laboratory, N.Z. M.Sc. (New Zealand University). Twenty years' experience in analytical work; now Assistant Dominion Analyst. Published work includes "Corrosion of Muntz Metal in Sea Water," *J.S.C.I.*, XLIII, 13, 72T; "Estimation of Nitrogen in Coal," *The Analyst*, Feb. 1924. (*Signed by*) J. S. Maclaurin, P. W. Robertson, K. M. Griffin.

DUNN, JOHN STANLEY, 39, Victoria Park, Cambridge. British. Chemist. M.A. (Cantab.), Ph.D. (London), A.I.C. Late Research Chemist, Calico Printers Assocn., Manchester; now Research Chemist, British Non-Ferrous Metals Res. Assocn. With Dr. E. K. Rideal: *T.*, 1923, **123**, 1242; *T.*, 1924, **125**, 676. (*Signed by*) R. G. W. Norrish, Eric K. Rideal, H. McCombie.

DYDE, JOHN HORSFALL, 18, Dean Rd., Scarborough. British. Student at the University, Leeds, who intends to pursue post-graduate work in Biochemistry. Final year B.Sc. (Honours Chemistry). (*Signed by*) C. K. Ingold, B. Topley, H. M. Dawson.

DYSON, GEORGE MALCOLM, 36, Hillsborough Road, E. Dulwich, London, S.E. 22. British. Research Chemist. B.A. (Oxon.), B.Sc., Ph.D. (London). Research in Organic Chemistry, including work on the Reactions of Thiocarbonyl Chloride with Amino-compounds, Phenols, etc. *J.C.S.*, Trans., Sept., 1924, **125**, 1702; "The Reactions of Thiocarbonyl Chloride. Pt. I." (*Signed by*) D. L. Chapman, H. J. George, L. Rubenstein.

ECCLES, ALFRED, 18, Cambrian Terrace, Holbeck, Leeds. British. Research Student (University of Leeds). B.Sc., 1st Class Hons. (Pure Chemistry), 1925. (*Signed by*) C. K. Ingold, P. K. Dutt, W. A. Wightman, J. W. Baker.

EDWARDS, EDWIN FRANCIS, Kogarah, Sydney, N.S.W., c/o Holbrooks (Australasia), Limited, Waterloo, Sydney. Works Chemist and Assistant

Factory Manager. Matriculated from High School at Leaving Certificate Examination, and gained Scholarship to Sydney Technical College. Attended the above College for five years—thereby completing the Diploma Course—and was subsequently granted the Associateship of the College, and the Diploma in Organic Chemistry. I am also an Associate of the Australian Chemical Institute. I was Assistant Chemist at the Woolwich Chemical Co., Sydney, for a period of two years, and Analyst at H.M. Customs, Sydney, for twelve months. At present I hold the above-mentioned position on the Staff of Holbrooks (Australasia), Limited, of Sydney. I desire admission to the Chemical Society in order to keep in touch with modern chemical literature and progress. (*Signed by*) Richard W. Challinor, Fred J. Berry, Robert Grant, Arthur R. Penfold, S. E. Sibley.

EDWARDS, JOHN MOELWYN, 92, Jamaica Rd., Rotherhithe, S.E. 16. British. Chemist and Pharmacist and Optician. (1) Early education at the Meirioneth County Grammar School. (2) Three years student of Chemistry at the Festiniog Higher Grade School. (3) Studied Analytical Chemistry and Physics under Mr. J. Thomas, B.Sc., at Muter's School of Chemistry. (4) Passed the Qualifying Examination of the Pharmaceutical Society of Great Britain in 1905. (5) Four years Sight Testing Optician with Mr. Hugh Jones, F.S.M.C., D.B.O.A. Am particularly anxious to keep in touch with Analytical work. (*Signed by*) Frank B. Arnold, John J. Laws, Percy Barrs.

ELLIOTT, GEORGE ALBERT, 263, Kennington Road, London, S.E. 11. British. Ramsay Memorial Fellow. M.Sc. (Lond.). (*Signed by*) L. F. Gilbert, S. Barratt, W. E. Garner.

EVANS, ERIC BERTRAM, 2, Boxmoor Terrace, Southchurch, Southend, Essex. English. Student. For two years a student at East London College; at present engaged in research there. Awarded 2nd Class in B.Sc. Hons. Lond., 1925. (*Signed by*) J. R. Partington, E. E. Turner, Elwyn Roberts.

EWBANK, (Miss) ELINOR KATHARINE, 22, Park Crescent, Oxford. British. Engaged in original research. Took 1st Class in Honours, School of Chemistry, Oxford, 1903. E. C. C. Baly and E. K. E., **87**, 1347; **87**, 1355. N. V. Sidgwick and E. K. E., **119**, 486; **121**, 1844; **125**, 2268. (*Signed by*) W. H. Perkin, N. V. Sidgwick, D. Ll. Hammick.

FARROW, (Miss) ELIZABETH MONICA OPENSHAW, 37, Chalfont Rd., Oxford. British. Demonstrator in Old Chemistry Dept., Oxford. Lecturer in Chemistry to 5 Women's Societies. M.A. (Oxon.) (*Signed by*) W. H. Perkin, N. V. Sidgwick, B. Lambert, M. P. Applebey, Allan F. Walden, E. G. J. Hartley, Frederick Soddy, J. Masson Gulland, S. G. P. Plant.

FREE, OLIVER, The Lodge, Mansfield College, Oxford. British. Demonstrator of Inorganic & Chemistry. B.A., 2nd Class Honours. Research Student in Physical Chemistry (Radioactivity). (*Signed by*) M. P. Applebey, Frederick Soddy, B. Lambert, N. V. Sidgwick, A. F. Walden.

FREEMAN, WILLIAM MARSHALL, 16, Oakwood Avenue, Beckenham, Kent. British. Of the Honourable Society of the Middle Temple, Barrister-at-Law, Recorder of Stamford, and formerly Member of the Pharmaceutical Society of Gt. Britain. Author of "The Patents and Designs Act 1907, with Appendix on Chemical Patents." Occasional contributor to legal and other journals on Food and Drugs legislation, etc. Interested particularly in the promotion of the study of chemico-legal science especially with reference to the administration of the criminal law. (*Signed by*) Ernest C. Bennison, H. Berry, Harry Silvester.

GEE, EVA FLORENCE, The Station, L.N.E.R., Howsham, Lincoln. British.

Student of Chemistry at Bedford College. (*Signed by*) J. F. Spencer, H. Crompton, J. Stewart.

GEMMELL, JAMES WALTER SHANKS, Helen's Villa, Fleming Place, St. Andrews. British. Research Chemist. B.Sc. (Hons.) St. Andrews; now employed in Research Dept., Jute Industries, Ltd., Dundee, and desirous of keeping in touch with recent developments in chemical science. (*Signed by*) A. Killen Macbeth, James Craik, John Pryde.

GLOVER, FRANCIS REGINALD, 98/100, St. Peter's Street, Nottingham. British. Managing Director, Cooke & Glover, Engineers, Ltd., Engineers and Consulting Chemists, Nottingham, M.I.H.V.E., A.M.I.S.E. (*Signed by*) E. B. R. Prideaux, J. B. Firth, B. D. Shaw.

GOUDIELOCK, WILLIAM BOUCH O'BRIEN, 28, Fairfield Lane, Barrow-in-Furness. British. Chief Analyst, Vickers Ltd., Barrow-in-Furness. Full Technological Certificate, City and Guilds Institute, in Chemistry, Metallurgy, and Iron and Steel. Pupil in Vickers' Lab. under H. B. Weeks, F.I.C., for 5 years. Chief Laboratory Assistant for 8 years. Chief Analyst ever since. Lecturer for 2 years to Vickers' Engineering Apprentices on Chemical and Metallurgical Subjects in Connection with Firm's Scheme for Higher Education of Apprentices. Lecturer to Barrow Engineer's Assoc., Jan. 1920 and Jan. 1923. I am desirous of keeping in close touch with modern developments in Scientific Chemistry. (*Signed by*) H. B. Weeks, A. H. Mundey, W. J. Davison.

GRIGG, FELIX JOHN THEODORE, Christchurch (N.Z.). British. Government Analyst, Government Buildings, Christchurch, N.Z. M.Sc. (N.Z.) with Honours in Chemistry. A.I.C. (Great Britain). Seven years' experience in analytical work. Now Government Analyst at Christchurch (N.Z.). Published work: "Geochemistry of the Thermal Lakes, North Island, N.Z." (*N.Z. Journal of Science and Technology*, 1922, Volume 5, page 156). (*Signed by*) J. S. Maclaurin, P. W. Robertson, K. M. Griffin.

HALL, GEORGE VINCENT, 6, Borough Road, Bridlington, Yorks. British. Student. Bachelor of Science, University of Leeds, June 1925. (*Signed by*) C. K. Ingold, H. M. Dawson, W. Lowson, P. K. Dutt.

HALL, JOHN, 202, Burton Rd., Derby. British. Chemist. M.Sc. (Leeds), A.I.C. Three years in Lab. of Sir W. G. Armstrong-Whitworth & Co.; two years in Lab. Dyehouse and Colour Plant of British Celanese. *J.C.S.*, **123**, 2029–2037. (*Signed by*) A. G. Perkin, G. Reeves, W. P. Skertchly.

HARE, WILLIAM ROWAN, 220, Eastfield, Peterborough. British. Student of Chemistry in the University of Oxford. Desirous of receiving literature (*Signed by*) D. Ll. Hammick, S. G. P. Plant, E. Hope.

HEALEY, WALTER, 28, Gooder Lane, Brighouse. English. Student, University of Leeds. Chemical Student who hopes to take up research. (*Signed by*) C. K. Ingold, P. K. Dutt, W. A. Wightman.

HENDERSON, THOMAS, M.C., M.A., B.Sc., Toronhill Schoolhouse, Dunfermline. Scottish. Demonstrator in Chemistry (Inorganic), University of Leeds. M.A., B.Sc., St. Andrews, 1921. Holding a grant from the Dept. of Scientific and Industrial Research, carried on research work at St. Andrews University, under direction of Sir James C. Irvine, and have held the appointment noted above since October 1922. Vol. **121**, 1922, Trans., p. 892; Vol. **123**, 1923, Trans., p. 1130. (*Signed by*) R. Whytlaw-Gray, H. S. Patterson, B. Topley, W. Lowson, J. C. Irvine, Ettie S. Steele.

HIRST, HERBERT SIM, Trinity College, Cambridge. British. Research Assistant to Dr. E. K. Rideal, under Department of Scientific and Industrial Research Regulations. First class honours graduate in Physics and Chemistry

of St. Andrews University, with two years' research experience in Cambridge. "The Thermal Decomposition of Nitrogen Pentoxide," 1925, **127**, 657. (*Signed by*) Eric K. Rideal, W. H. Mills, Ulick R. Evans.

HUSAIN, SYED, 112, Gower St., London, W.C. 1. Indian. Student. M.Sc. (Aligarh Muslim University, India). (*Signed by*) J. R. Partington, E. E. Turner, Elwyn Roberts.

IWADARE, TORU, c/o Banyu Pharmaceutical Co., Ltd., 174, Shimomeguro, Tokyo, Japan. Japanese Proper. Became Chief Chemist and Managing Director of Banyu Pharmaceutical Co., Ltd., in September 1915. Have two years' experience as Assistant of the Chemical Dept. of the Tokyo Imperial University, and ten years' experience as Chief Chemist and Managing Director of Banyu Pharmaceutical Co., Ltd. Graduate, College of Science (Chemistry), Tokyo Imperial University, 1913. (*Signed by*) Joji Sakurai, T. Takamatsu, Y. Asahina.

JAYEWARDENE, DAVID CHRISTOPHER MENDIS, Fern Bank, Moratuwa, Ceylon. Sinhalese, British. Science Master, Prince of Wales' College, Moratuwa. (1) Science Master, St. John's College, Panadura, Ceylon (1918 and 1919). (2) Asst. Chemist, Butter Substitutes Supplies, Ltd., Colombo (1920). (3) Science Master, Prince of Wales' College, Moratuwa (since 1921). (*Signed by*) W. N. Rae, J. P. C. Chandrasena, K. V. Rau.

JESSOP, GILBERT, 453, Glossop Rd., Sheffield. British. Research Chemist. M.Sc., Ph.D. (Sheffield). Three years' Research in Physical Chemistry. Papers in the *Proc. Roy. Soc.*, 1925, **98B**, 206 (with Mr. N. K. Adam), and in the *J.C.S.* (with Mr. F. G. Tryhorn), 1925, **127**, 1320; (with Mr. N. K. Adam), 1925, **127**, 1863. (*Signed by*) W. P. Wynne, F. G. Tryhorn, N. K. Adam.

JOHNSON, CHARLES BENJAMIN, 134, Preston New Road, Blackburn. British. Minister of Religion (Fellow of Royal Astronomical Society). I desire to keep abreast, by means of the Society's Publications, of advance in General and Physical Chemistry. (*Signed by*) G. W. F. Holroyd, J. Hindle, Robert H. Pickard.

JONES, WALTER IDRIS, 7, Manor Street, Cambridge. Welsh. Research Student. Gonville and Caius College, Cambridge. Ph.D. (Cantab.), B.Sc. (Wales), etc. *Trans. Chem. Soc.*, 1923, **123**, 2688; 1924, **125**, 2590. (*Signed by*) Hamilton McCombie, John Dexter, Harold A. Scarborough.

KEENAN, HENRY WILFRID, 80, Upper Richmond Road, East Sheen, S.W. 14. British. Works Chemist. Practical experience in various branches of Analytical and Manufacturing Chemistry founded on a three years' Systematic Apprenticeship (with evening studies) under Dr. Julius Holzapfel and Dr. P. E. Bowles, F.I.C., by whom indentures are signed. Invented processes (including design and erection of plant for large scale production) dealing with (*a*) Paint and Varnish Industry, (*b*) Celluloid Industry, (*c*) Oils, and operated successfully. (*Signed by*) Charles Dorée, Francis Arnall, J. C. Crocker.

KEMP, BRIAN CHARLES LAVERS, Wellington College, Berks. British. Schoolmaster. Chemistry Master (VIth Form) at Wellington College; B.A. (Oxon.). 1922–23, research work on derivatives of Dianisoyl Methane. (*Signed by*) G. Watson Gray, D. Ll. Hammick, B. Lambert.

KING, CHARLES, F.S.A. (Scot.), 21, Newton Place, Glasgow. British. Electro-therapeutist. Fellow of the Society of Science, Lond. Applicant is in practice as Electro-therapeutist, and is desirous of keeping in touch with current chemical progress. (*Signed by*) G. G. Henderson, J. Roberts, Archd. N. Currie.

KOCH, FREDERICK KARL VICTOR, 9, Crossfield Road, Hampstead, N.W. 3.

English. Research in Physical Chemistry, Imperial College of Science and Technology. B.Sc. (1st Class), A.R.C.S. (2nd Class). (*Signed by*) James C. Philip, H. J. T. Ellingham, H. F. Harwood.

LANGFORD, CHARLES DUDLEY, 43, Ashbourne Av., Temple Fortune, London, N.W. 11. British. Research Student (Organic Chemistry), Royal College of Science. A.R.C.S., B.Sc. Honours (passed 1925, to be awarded 1926 owing to regulations). (*Signed by*) G. A. R. Kon, R. W. West, E. H. Farmer.

LAHOIA, BANARSI DAS, Pindi Street, Ludhiana, Punjab, India. Indian. Student. B.Sc. (Hons.) Punjab University (India), B.A. (Hons.) Oxford University. At present student of Imperial College of Science and Technology (for Ph.D.). (*Signed by*) E. H. Farmer, G. A. R. Kon, M. A. Whiteley.

LASZLO, HENRY GUINNESS DE, 3, Fitzjohn's Avenue, Hampstead, N.W. 3. British. Research Chemist. B.A. Hons. (Cantab.), Ph.D. (Zurich). (*Signed by*) M. A. Whiteley, G. Ingle Finch, Samuel Smiles.

LEATHERBARROW, BERTRAM GREY, Hill Crest, Station Rd., Brimington, Chesterfield. British. Senior Assistant Teacher, Brimington Central School. Intermediate B.Sc. Two years subsequent graduation courses. Headmaster, Brimington Central Evening School, teaching all the Technical Courses. Student, Liverpool University 1919–1923. (*Signed by*) E. C. C. Baly, W. C. McC. Lewis, I. M. Heilbron, H. J. Stern.

LENHER, SAM, 15, Gordon Street, London, W.C. 1. American. Research Student at the Ramsay Laboratory, University College, London. Graduate of the University of Wisconsin (B.A. Degree), 1924. Internal student for the Ph.D. degree, University College, London, one year. McHaffie and Lenher, *J.C.S.*, 1925, **127**, 1559–1572. (*Signed by*) F. G. Donnan, W. E. Garner, J. A. Currie.

LENNON, JOHN JOSEPH, 6, Bartlemas Road, Oxford. Irish. Research Student. M.Sc., National University of Ireland, 1924, 1851 Scholar. Paper in collaboration with Hugh Ryan, D.Sc., *Proc. Royal Irish Acad.*, xxxvii, B, p. 27. (*Signed by*) W. H. Perkin, Francis Lions, R. D. Haworth, John Rankin.

MACARTNEY, WILLIAM, c/o Grattan & Co., Ltd., Belfast. British. Pharmaceutical Chemist. Chief Chemist of Messrs. Grattan & Co., Ltd., Wholesale Manufacturing Chemists and Aerated Water Manufacturers. Member of the Pharmaceutical Society of Ireland. Vice-President North Irish Pharmaceutical Society, Vice-President Ulster Drug Trade Association. No published papers in the *Journal of the Chemical Society*. In order to keep in touch with current advances in Chemistry. (*Signed by*) Henry Wren, Chas. J. Still, A. W. Stewart, Theo. Harper.

MCHAFFIE, IVAN ROY, 37, King Henry's Rd., London, N.W. 3. Canadian. Research Student, University College, London. B.A., M.Sc. University of Manitoba, Canada. "The Adsorption of Water from the Gas Phase on Plane Surfaces of Glass and Platinum," *J.C.S.*, 1925, **127**, 1559–1572. (*Signed by*) F. G. Donnan, W. E. Garner, S. Barratt.

MCLEAN, NEIL, M.A., B.Sc., 127, Blenheim Place, Aberdeen. British. Station Director of the British Broadcasting Station at Aberdeen. Applicant is a Master of Arts and Bachelor of Science of Glasgow University, and is much interested in chemical science and desirous of having the best available literature on this subject for the purposes of his work. (*Signed by*) J. F. Tocher, G. G. Henderson, Archd. N. Currie.

MANCHESTER, LESLIE GEORGE, 557, Green Lanes, Hornsey, N. 8. British. Student. Two years a student at East London College; now engaged in

research work at same college; awarded 2nd Class in B.Sc. Hons. Lond. 1925. (*Signed by*) J. R. Partington, E. E. Turner, R. J. W. Le Fèvre.

MARKWELL, WILLIAM ALFRED NOTTAGE, 26, Huntsmoor Road, S.W. 18. English. Chemist. Desire to receive the *Journal* and to keep in touch with the progress of Chemical Science. (*Signed by*) E. W. Lucas, S. Greenberg, F. C. Ray, J. L. White, Henry Phillips.

MARTIN, WILLIAM FRANCIS, 27, Shandon Crescent, Edinburgh. British. Work's Chemist, in the employment of Messrs. T. & H. Smith, Ltd., Blandfield Chemical Works, Edinburgh. Fellow of Institute of Chemistry (F.I.C.), Member of Pharmaceutical Soc. of Gt. Britain (M.P.S.). (*Signed by*) James Walker, Alexander J. Dey, James Watt.

MILLER, CHARLES HENRY LAWRENCE, 50, Rowden Rd., Beckenham, Kent. British. Student (B.Sc. Honours Chemistry) at East London College. At present doing research work. Desirous of keeping in touch with modern Chemical Research. (*Signed by*) J. R. Partington, E. E. Turner, D. C. Jones, W. H. Patterson.

MOORE, ARTHUR, Highfield, Oakworth, Keighley, Yorks. British. Student (Chemistry). 3rd Year (final) Hons. Chemistry, Royal Coll. of Science, London, S.W. 7. (*Signed by*) H. L. Riley, H. F. Harwood, H. D. Murray.

MORRISON, ALEXANDER JOHN, Sydney, N.S.W. Assistant Superintendent of Testing and Inspection, Public Works Dept., Sydney. *Training :* Student for 3 years (night course) in the Chemical and Assay Laboratory of the late William Grosse, Mining Engineer and Metallurgist. *Sydney Technical College :* 4 years' course practical chemistry; 3 years' course theoretical chemistry; 2 years' course organic chemistry. Engaged on special investigation in connection with fixed oils and alloys. *Original Papers :* (With F. R. Morrison), "Examination of the fixed oil of the Queensland Nut," read before the Sydney Technical College Chemical Society (Vol. 1, pages 84—88). "Testing of Sand for Use in Portland Cement Mixtures," Paper read before the Sydney Technical College Chemical Society 1914 (Vol. 1, pages 17—26). "Permeability of Concrete" (with the late B. J. Smart, B.Sc. (London), Paper read before the Engineering Association of New South Wales (Vol. xxxiii, Part 2, page 1). Have been engaged in the chemical and mechanical testing of all classes of structural materials in the Testing Laboratory, Public Works Department, New South Wales, for the past 27 years. These materials include Portland cement, steel, alloys, asphaltum, tars, paints, oils, etc. Representative of the Australian Chem. Institute on the Engineering Standardisation Committee dealing with the drawing up of a Standard Specification for Portland Cement for the Commonwealth of Australia. (*Signed by*) A. R. Penfold, R. Grant, Richard W. Challinor, Fred J. Berry, George Z. Du Pain.

MORRISON, FRANK RICHARD, Brae Street, Waverley, Sydney, N.S.W. Australia. Asst. Economic Chemist, Technological Museum, Sydney. Diploma in Chemistry of Sydney Technical College, 1921. Associate of Australian Chemical Institute since 1920. Member of Royal Society of N.S.W. since 1921. Member of Sydney Technical College Chemical Society since 1913, and Joint Hon. Secretary since 1921. *Positions held :* One year in laboratory of Sydney Technical College; three years in laboratory of Metropolitan Board of Water Supply and Sewerage, Sydney; nine years in present position at Technological Museum, Sydney. *Original papers :* "The Occurrence of Rutin in the leaves of the *Boronia* (N. O. Rutaceæ)" (read before the Royal Society of N.S.W., 2nd November, 1921); "The

essential oil of *Kunzea corifolia*" (read before the Royal Society of N.S.W., 1st November, 1922); "A Chemical examination of the seeds of the 'Bunya Bunya' (*Araucaria Bidwilli*, Hooker)" (read before the Royal Society of N.S.W., 3rd December, 1924). *Conjointly with Mr. A. R. Penfold, F.A.C.I., F.C.S.* "Preliminary note on a new stearoptene (probably a phenol ether) occurring in some essential oils of the Myrtaceæ" (read before the Royal Society of N.S.W., 5th July, 1922); "The essential oil of *Eriostemon Crowei* (*Crowea saligna*) and the presence of a new phenol ether" (read before the Royal Society of N.S.W., 6th December, 1922); "Preliminary note on the electrolytic reduction of Piperitone" (read before the Royal Society of N.S.W., 5th September, 1923); "Notes on *Eucalyptus piperita* and its essential oils, with special reference to their Piperitone content" (read before the Royal Society of N.S.W., 2nd July, 1924). *Conjointly with Mr. A. Morrison:* "The chemical examination of the fixed oil of the Queensland Nut (*Macadamia ternifolia*)" (read before the Sydney Technical College Chemical Society, 24th June, 1923). (*Signed by*) A. R. Penfold, R. Grant, Richard W. Challinor, Fred J. Berry, George Z. Du Pain.

MURGATROYD, JOHN BLACKBURN, 90, St. George's Square, Westminster, S.W. 1. British. Demonstrator, Imperial College of Science and Technology, South Kensington. Taking up Research at the above College. (*Signed by*) H. B. Baker, J. N. Sugden, Leslie S. Theobald.

NANAVATI, CHITSUKHLAL HIRALAL, 80, Esplanade Road, Fort, Bombay. Hindoo. L.T.C., Analytical Chemist. Graduate of The Victoria Jubilee Technical Institute, Bombay; in Chemistry with special subject of Foods, Drugs and General Analysis; in Second Class with the title of Licentiate of Technical Chemistry, of the year 1921. Worked as Analytical Chemist with Messrs. Hughes & Davies and Messrs. Killick, Nixon & Co.; at present practising as Analytical Chemist. (*Signed by*) S. J. Shâh, Kapilram H. Vakil, R. G. Saraiya.

NICHOLSON, HENRY, "Aberlady," Osborne Rd., Stockton-on-Tees. English. Chemistry Master in Boys Secondary School, Stockton-on-Tees, since Nov. 1905. B.Sc. Durham University, 1904. M.Sc. for Research on the influence of the acetyl group as a protective agent in the oxidation of α-acetylnaphthylamine, 1907. (*Signed by*) J. G. Taylor, J. A. Smythe, W. M. Madgin.

O'MEARA, ANNA MARIA, 83, Elsham Road, Holland Park, Kensington, W. 14. Irish. Pharmacist. M.P.S. (London). Was for 4 years trained under John Armstedt Ray, M.A., Ph.C., Trinity Coll., Dublin, at his Laboratory in 23, Nassau Street, but never took any Analytical Examination. Was 3 years Pharmacist at Bolingbroke Hospital, Wandsworth Common, S.W. 11; was 1 year at Willesden General Hospital as Pharmacist, and occasionally have worked at the M.A.B. Homerton and Park Royal, Hither Green. At present am pharmacist at the Women's Hospital, Soho Sq., and I take Students for both the qualifying and Apothecaries' Hall Exam. and train them for same. (*Signed by*) H. Lucas, A. Thomas, S. Greenberg.

PALMER, HORACE WINSTON, 15, Hollingdean Terrace, Brighton. British. Research Student, East London College. B.Sc. London, Hons. I, Chemistry. (*Signed by*) J. R. Partington, D. C. Jones, W. H. Patterson.

PARKER, NORMAN FREDERICK, 45, Sellons Avenue, Harlesden, N.W. 10. British (English). Chemical Engineer. B.A. Cambridge; Associate of Institute of Chemistry; 1st Class, Natural Science Tripos, Part II (Chemistry), 1923. (*Signed by*) W. J. Pope, C. T. Heycock, W. H. Mills.

PATTERSON, AUSTIN MCDOWELL, Antioch College, Yellow Springs, Ohio,

U.S.A. United States. Professor of Chemistry, Antioch College, U.S.A. Formerly Editor of *Chemical Abstracts*. (*Signed by*) C. S. Gibson, T. Slater Price, John Greenaway.

PHILLIS, ERNEST, 22, Fairford Terrace, Dewsbury Rd., Leeds. British. Research Student, Leeds University. B.Sc., 1st Class Hons. in Pure Chemistry, 1925. (*Signed by*) J. B. Cohen, C. K. Ingold, P. K. Dutt, J. W. Baker.

POLLITT, JONATHAN, 17, Caversham Avenue, Palmers Green, N. 13. English. Chemistry Master, Hornsey County School, 1905– . B.A. (N.U.I.) Chemistry, Physics, Maths. Student (Chemistry) Birkbeck College since 1908. (*Signed by*) George Senter, Samuel Sugden, B. R. Heasman, F. J. Thorneycroft, A. M. Ward, Wm. W. Myddleton.

PORTER, CHARLES RAYMOND, 126, Linden Road, Bournville, Birmingham. English. Chemistry research assistant. M.Sc., A.I.C. Three years research assistant in Chemistry Department, University of Birmingham; part author of *Berichte*, 1925, **58**, 333, and *J.C.S.*, 1924, **125**, 731 and 1269. (*Signed by*) J. D. Main Smith, W. J. Hickinbottom, W. N. Haworth.

PRICE, EVAN EMRYS, Rock House, Heathfield, Swansea, Glam. British. Science Teacher, The College, Penarth, S. Wales. Graduate in Chemistry of University of Wales. Studied at University College, Swansea, 1920—1924. (*Signed by*) J. E. Coates, Leonard E. Hinkel, E. Stanley Hiscocks.

PRING, MARJORIE ELLEN, 66, St. Augustine's Avenue, S. Croydon, Surrey. British. Research Student at Bedford College for Women, Regent's Park. B.Sc., 1st Class Hons. in Chemistry, London University. (*Signed by*) J. F. Spencer, H. Crompton, M. S. Crewdson.

RÂY, JNANENDRA NATH, Calcutta. Indian. Lecturer, Calcutta University, M.Sc. (Cal.). Research Student, Manchester Univ. "Synthesis of oxyberberine" (joint author), *J.*, 1925, **127**, 740; "Synthesis in the Thianthren series," *J.*, 1921, **119**, 1959; "Catalytic action of Iodine in sulphonation," *J.*, 1920, **117**, 1405; joint author, "Modification and extension of Friedel & Crafts' reaction," *J.*, 1920, **117**, 1335. (*Signed by*) Robert Robinson, Arthur Lapworth, Henry Stephen, Wilson Baker.

ROBERTS, HERBERT CHARLES, 15, Estcourt Terrace, Headingley, Leeds. British. Chemist Director, Taylor's Drug Co., Ltd., P.O. Box 141, Burley Hill, Leeds. 20 years Analytical Chemist to above Co. Since 1908 Chemist Director and Superintendent under the Pharmacy Act to above Co. (*Signed by*) John Rennie, F. C. Savage, F. Pilkington Sargeant.

SANDERSON, PHYLLIS MARY, 7, Cresswell Place, S.W. 10. British. Research (Biochemical). I desire to become a member of this Society for the purpose of keeping in touch with current scientific investigations. (*Signed by*) F. G. Donnan, W. E. Garner, Henry Terrey.

SASS, ROSE RACHEL, Newnham College, Cambridge. British. Research Student. B.Sc. Hons. of the University of the Witwatersrand, Johannesburg, S. Africa. Demonstrator for 3 years. Now a research student in the Laboratory of Physical Chemistry, Cambridge University. (*Signed by*) T. M. Lowry, Eric K. Rideal, I. J. Faulkner.

SAXON, ROBERT, Westfield Terrace, Baildon, Yorks. British. Schoolmaster. Teacher of Chemistry at the Belle Vue Secondary School for 17 years. Teacher of Steam and Heat Engines, which included the Thermal Chemistry of Carbon and Hydrogen combustion and tests for SH_2, NH_3, etc., in Coal and Producer Gas for 15 years in the Belle Vue Technical School (evening). Eleven years Head Master present School, The Forster School for Boys, Bradford, under the Bradford Authority; entrance to school only by

Scholarship Examination. Bachelor of Science, Victoria Univ., Manchester, 1896. Studies under Prof. Tilden, Royal Coll. of Science, London, 1900, and Prof. Watts, Geology, 1901 (Vacation Course). (*Signed by*) Barker North, Robt. D. Abell, T. W. Price.

SCIVER, ALBERT, 84, Vineyard Hill, Wimbledon Park, S.W. 19. English. Analytical and Consulting Chemist and Bacteriologist. B.Sc. (First Class Honours, University College, London), A.I.C. Assistant to Drs. S. and E. K. Rideal, 28, Victoria St., S.W. 1. Lecturer on Bacteriology applied to Chemistry at Battersea Polytechnic. (*Signed by*) F. G. Donnan, Eric K. Rideal, W. E. Garner.

SCOTT, GEORGE BATY, 37, Woodbridge Road, Knowle, Bristol. British. Organic and Inorganic Chemistry Student for two years at Central Polytechnic Institute, after passing the Qualifying Examination of Pharmaceutical Society, 1896. For some years have been closely associated with British Fine Chemicals, embracing Dye Intermediates, Research Chemicals, Saccharin and by-products. Wishful to have access to Society's Library and Publications, thus keeping up to date with the latest advances in Chemistry. (*Signed by*) J. Wicliffe Peck, D. Hughes, T. O. Kent, W. D. Wallace, Archibald Macpherson.

SCAMMELL, RUPERT BOSWOOD, c/o F. H. Faulding & Co., Ltd., Castlereagh St., Redfern, Sydney, N.S.W. British. Manufacturing Chemist. Bachelor of Science (Sydney). Six years' experience in Manufacturing Chemistry with the above firm. I desire to keep in touch with modern chemical literature for research purposes. (*Signed by*) J. Kenner, George Harker, J. C. Earl.

SHIN, UPO, B.A.S., Agricultural Farm, Mandalay. Burman. Officiating Agricultural Chemist, Burma, Mandalay. Published as Memoirs of the Department of Agriculture in India on "The Phosphate Requirements of some Lower Burma Paddy Soils." (*Signed by*) Maung Ba, Maung Ba San, Maung Tun Tin.

SINGH, DALIP, near Tehsil, P.O. Lahore, India. Indian. Research Student, Cambridge University. Ph.D. Cambridge. (*Signed by*) W. J. Pope, W. H. Mills, Eric K. Rideal.

SMITH, FREDERICK FRANCIS PERCIVAL, Peterhouse, Cambridge. British. Research Student in the Cambridge Univ. Laboratories. 1st Class Nat. Sci. Tripos, Parts I and II. 1st Class London Ext. B.Sc. Hons. (in Chemistry). (*Signed by*) Hamilton McCombie, Harold A. Scarborough, W. A. Waters.

SMITH, ROBERT FREDERICK, 254, Higham Hill Road, Walthamstow, E. 17. British. Student of Chemistry at East London College. Desirous of keeping in touch with Modern Research. (*Signed by*) J. R. Partington, E. E. Turner, Elwyn Roberts.

SOPER, WILLIAM ERNEST, 50, Aislibie Road, Lee, London, S.E. 12. British. Research Student at East London College. B.Sc. (Lond.). (*Signed by*) J. R. Partington, E. E. Turner, Elwyn Roberts.

SOUTHERN, HERBERT KENNETH, Glenariff, Whaley Bridge, Nr. Stockport, Cheshire, also Government Laboratory, Strand, W.C. 2. British. Temporary Assistant Chemist, Government Laboratory. B.Sc. (Hons. Chem.) after 3 years and M.Sc. after a further year's research work in physical chemistry at Manchester University. Assistant Demonstrator in chemistry for 1 year at Manchester University. Six months as chemist with paint and enamel firm; 4 months at Government Laboratory. (*Signed by*) Robert Robertson, J. J. Fox, Geo. Stubbs, T. W. Harrison.

SPEIGHT, ERIC ALFRED, 61, Arthur Road, Wimbledon Park, S.W. 19.

British. Research worker in Organic Chemistry. Associateship of the Royal College of Science. B.Sc. (Lond.), Diploma of Imperial College, all in Chemistry. Have been engaged in study of Chemistry for 6 years, the last two being research. Published paper in Oct. 1924 *J.C.S.* on formation of Hydrindone derivatives. (*Signed by*) Jocelyn Thorpe, G. A. R. Kon, Arnold Stevenson.

SWIRE, FRANK HARLAND, 152, Queen's Road, Halifax, Yorks. British. Pharmacist. "Minor" Qualification of the Pharmaceutical Society. Member of the Pharmaceutical Society of Gt. Britain. Late Student in Chemistry at the Halifax Technical College and at The School of Pharmacy, Bloomsbury Sq., London, W.C. 1. (*Signed by*) T. E. Wallis, F. Browne, W. J. Stansfield.

TATTERSALL, HAROLD JAMES, B.Sc., Ph.D., 141, Thorold Road, Ilford, London, E. British. Research Chemist. Graduate of St. Andrews University. B.Sc., Ph.D. Research work carried out at University College, Dundee. Presently engaged in research photographic chemistry. Publishing under authorship McKenzie and Tattersall, probably in November 1925. (*Signed by*) Alex. McKenzie, O. Rhys Howell, R. Roger, John Foggie.

THORPE, WILLIAM VEALE, 270, Balham High Road, London, S.W. British. Research Student, Medical Research Council, Mount Vernon, Hampstead, N.W. 3. B.A. (Cambridge Natural Science Tripos, Parts I and II). One year's research at Mount Vernon. (*Signed by*) W. J. Pope, Jocelyn Thorpe, Hamilton McCombie, W. H. Mills.

TOWLER, WILLIAM MILBURN, 28, Denton Ave., Roundhay, Leeds. British. Student. B.Sc. Hons. Chemistry, Leeds University. (*Signed by*) H. M. Dawson, P. K. Dutt, H. Holness.

TRAILL, DAVID, 58, Chalmers St., Dunfermline, Scottish. Research Student. B.Sc. (1st Cl. Hons. Chemistry, St. Andrews), 1923. Research in Organic Chemistry, 1923–1925. Macbeth and Traill, *T.*, 1925, **127**, 892; and 1118. (*Signed by*) A. Killen Macbeth, Irvine Masson, James Craik.

TRICKER, ELVERA ANNIE, 319, Norwich Rd., Ipswich. British. Student of Chemistry at Bedford College. (*Signed by*) J. F. Spencer, H. Crompton, J. Stewart.

TURNER, DONALD MORRISON, 40–42, Lexington St., W. 1. British. Representative of Mead Johnson & Co., Food Specialists. M.Am.Chem.Soc. Ten years Asst. Analyst, Govt. Laboratory, Newfoundland. Desire to receive the publications of the Society and keep in touch with modern work. (*Signed by*) D. James Davies, G. S. W. Marlow, F. S. Aumonier.

TURNER, GEOFFREY, 85, Winchester Avenue, Leicester. English. Research Student, attending Loughborough College, Leics. B.Sc. (2nd Class Honours, London); Diploma of Loughborough College (Honours). (*Signed by*) A. Bramley, A. T. Eggington, G. Lawton.

TYLER, NORMAN LEOPOLD, 9, St. Paul's Gardens, Spennymoor, Co. Durham. British. Chief Chemist and Manager of Messrs. Intermediates and Explosives, Ltd., Dean and Chapter Colliery, Ferryhill, Co. Durham. City and Guilds and South Kensington Examinations, Inorganic and Organic. South Staffs. Scholarship Metallurgy., Iron and Steel. Secretary of N.E. Section of the British Association of Chemists. Fourteen years with Messrs. Chance and Hunt, Ltd., Oldbury and Wednesbury. Chemist in Charge of several plants for eight years. (*Signed by*) S. I. Levy, L. R. B. Pearce, W. A. S. Calder.

VERNON, HERBERT WARD, 245, Albert Rd., London, N. 22. British. Research Chemist. B.Sc. in Hons. Chemistry of Victoria University, Manchester. Held post as Research Chemist for last nine years. (*Signed by*) Percy C. C. Isherwood, B. H. Bowles, R. E. Brett.

WEBB, FREDERICK HENRY, "St. Malo," Jameson Road, Harpenden. British. Manufacturing Chemist and Optician. (1) Early Education at the Dunstable Grammar School. (2) Studied Analytical Chemistry under J. B. Hoblyn, B.Sc., F.I.C. (3) Studied Chemistry and Physics at the London School of Chemistry under Henry Wootton, B.Sc. (4) Passed the Qualifying Examination of the Pharmaceutical Society in 1910. (5) Passed the Qualifying Examination as a Fellow of the National Association of Opticians in 1923. Particularly interested in Analytical and Scientific work. (*Signed by*) Frank B. Arnold, J. J. Laws, Percy Barrs.

WILLIAMS, EWART HARROD, 31, Thornsbeach Road, Catford, S.E. 6. British. Chemist, Government Laboratory, Clement's Inn Passage, W.C. B.Sc. (Hons. Lond.), A.C.G.F.C., A.I.C. Research work at Finsbury Technical College with Prof. A. J. Hale, and at the Government Laboratory with Dr. J. J. Fox. I desire to keep in touch with modern developments in Pure and Applied Chemistry, through the Society's Journal, and by attending the Scientific Meetings of the Society. (*Signed by*) Robert Robertson, Geo. Stubbs, J. J. Fox, A. G. Francis.

WILLIAMS, GWYN, Cae Ffynnon, Llandudno Junction, North Wales. Welsh. Research Student in Chemistry at University College of North Wales, Bangor. 1924, B.Sc. (Wales) with 1st Class Hons. in Chemistry. 1924–5, Research Student at University College, Bangor. (*Signed by*) Kennedy Orton, F. G. Soper, H. B. Watson.

WILLIAMS, HUGH AMPHLETT, 249, Kennington Rd., S.E. 11. English. Student. Student of the Institute of Chemistry, desiring the use of the Library and the Periodicals. (*Signed by*) George A. Stokes, Ernest W. Wright, A. J. Hale, H. M. Atkinson.

WILLIAMS, ROBERT HARDING, 131, Anlaby Road, Hull. British. Chemist (Pharmaceutical), practising as a Chemist at above address. (Leeds University Matric.). Two years at Swansea Municipal College (3rd year Medical Student). M.P.S. (1907). One year Hull Technical College. Was 2 years as Chemist in Middlesbro' (Analytical), and have been in business at above address nearly 4 years. Have been doing analytical work for a number of years. (*Signed by*) Harry Thompson, Thos. A. Nightscales, Edward Chapman.

WILTSHIRE, JOHN LAURENCE, 36, Fordel Road, Catford, London, S.E. 6. English. Assistant Works Chemist to Messrs. Burt, Boulton, and Haywood, Coal Tar Distillers, London. B.Sc. London, 2nd Class Honours in Chemistry (1925). Three years' experience with consulting analyst (Mr. F. W. Harbord). Now occupied as above and in pure chemical research under Mr. E. de B. Barnett at the Sir John Cass Technical Institute, London. (*Signed by*) E. de Barry Barnett, Marcus A. Matthews, James W. Cook.

WOLFE, JOHN JAMES BENJAMIN, 24, Greyhound Road, Hammersmith, W. 6. English. Student (Research), East London College. (*Signed by*) J. R. Partington, Elwyn Roberts, D. C. Jones.

WRIGHT, GORDON MITCHELL, University Chemical Labs., Cambridge. British. Research Chemist. M.A. (Cantab.), B.Sc. (Glasgow). (*Signed by*) Hamilton McCombie, A. C. P. Lunn, Harold A. Scarborough.

WYATT, WILFRED FISHER, North Anston, Nr. Sheffield. British. Demonstrator in Chemistry, the University of Sheffield. B.Sc. Hons. Chemistry, 1923, Sheffield University; M.Sc., 1924, Sheffield University. (*Signed by*) W. P. Wynne, F. G. Tryhorn, G. M. Bennett, Arthur W. Chapman.

ZIMMERMANN, JOHN FREDERICK, 17, Stile Hall Gardens, Chiswick, W. 4. British. Research Chemist. Diploma of Engineer Chemist, Zurich Poly-

technicum. 2½ Years as Assistant to Dr. Tcherniac. (*Signed by*) J. Tcherniac, A. G. Bloxam, C. S. Gibson.

The following Certificates have been authorised by the Council for presentation to ballot under Bye-Law I (2).

CUTHBERT, BERTRAM, c/o The British Australian Cotton Assocn., Oil Mills, Brisbane, Australia. British. Oil Mills Manager. 1906–1912, Analytical Chemist, The Hull Oil Manuf. Co., Ltd., Hull, Eng. 1912–1914, Research Chemist, The Hull Oil Manuf. Co., Ltd., Hull, Eng. 1914–1919, Research Chemist and Refinery Manager for the Hull Oil Manuf. Co., Ltd. 1920–1923, Assistant Works Manager and Soap Works Manager for the Hull Oil Manuf. Co., Ltd. 1923 to present time, Oil Mills Manager for the British Aust. Cotton Assocn., Ltd., Brisbane, Queensland, Australia. (*Signed by*) Geo. H. Appleyard, H. W. Potts.

MILLER, EDGAR CALVIN LE ROY, c/o Medical College of Virginia, Richmond, Va., U.S.A. English. Teacher in Medical College of Virginia. Professor of Biological Chemistry and Bacteriology. M.D. (University of Michigan). Secretary of the Virginia Academy of Science. Past secretary and past chairman of the Virginia Section of the American Chemical Society. (*Signed by*) F. P. Dunnington.

SIGOT, ALBERT LOUIS AUGUSTE, Institut de chimie, 2, Rue Goethe, Strasbourg. Français. Licencié ès Sciences, préparateur à la Faculté des Sciences de l'Université de Strasbourg. Chargé des travaux pratiques de Chimie Physique. (*Signed by*) Louis Hackspill, Georges Baume.

ADDITIONS TO THE LIBRARY.

I. *Donations.*

ABDERHALDEN, EMIL. [Editor.] Handbuch der biologischen Arbeitsmethoden. Abt. I. Chemische Methoden, Teil 2, Heft i. Berlin 1925. pp. 456. *M.* 21. (*Recd.* 2/11/25.)

From the Publishers: Herren Urban & Schwarzenburg.

BARBAUDY, JEAN. Contribution a l'étude de la distillation des mélanges ternaires hétérogènes. Paris 1925. pp. iv + 156. ill. (*Recd.* 11/11/25.) From the Author.

EUCKEN, ARNOLD. Fundamentals of physical chemistry. Translated and adapted from the 2nd German edition by ERIC R. JETTE and VICTOR K. LAMER. New York 1925. pp. xxiv + 700. ill. 27*s.* 6*d.* net. (*Recd.* 12/11/25.)

From the Publishers: The McGraw-Hill Publishing Co.

JOURNAL OF THE CHEMICAL INDUSTRY. Vol. I, etc. Moscow 1924 +. [In Russian.] (*Reference.*) From Dr. M. Nierenstein.

KOPACZEWSKI, W. Introduction a l'étude des colloïdes: état colloïdal et ses applications. Paris [1925]. pp. viii + 226. ill. 16 *fr.* (*Recd.* 2/11/25.)

From the Publishers: MM. Gauthier-Villars et Cie.

LEVENE, P. A. Hexosamines and mucoproteins. London 1925. pp. x + 164. 10*s.* 6*d.* net. (*Recd.* 22/10/25.)
From the Publishers: Messrs. Longmans, Green & Co.

MASSON, IRVINE. Three centuries of chemistry: phases in the growth of a science. London 1925. pp. 192. ill. 10*s.* 6*d.* net. (*Recd.* 3/11/25.) From the Publishers: Messrs. Ernest Benn.

NAGAOKA, HANTARO. Anniversary volume. By his friends and pupils on the completion of 25 years of his Professorship. Tokyo 1925. pp. xvi + 424. ill. From the Tokyo Imperial University.

RUSSIAN PHYSICAL AND CHEMICAL SOCIETY. Journal. [Chemical Section.] Vol. 55, part 5, etc., Leningrad 1924 +. [In Russian.] (*For circulation.*) From Dr. M. Nierenstein.

THOMS, HERMANN. [Editor.] Handbuch der praktischen und wissenschaftlichen Pharmazie. Vol. III. Part iv. Vol. IV. Part ii. Berlin 1925. pp. [288], [272]. ill. *M.* 20. (*Recd.* 2/11/25.)
From the Publishers: Herren Urban & Schwarzenberg.

WEST, CLARENCE JAY, and BEROLZHEIMER, D.D. Bibliography of bibliographies on chemistry and chemical technology 1900—1924. (Bulletin of the National Research Council, No. 50.) Washington, D.C. 1925. pp. 308. (*Reference.*) $2.50 net.
From the Publishers: The National Research Council.

II. *By Purchase.*

ARNOU, CH. Les industries de la conservation des fruits. 3 parts. Vannes 1925. pp. 356, 280, 142. ill. 55 *fr.* (*Recd.* 5/11/25.)

ARRHENIUS, SVANTE AUGUST. Chemistry in modern life. Translated by CLIFFORD SHATTUCK LEONARD. New York 1925. pp. xvi + 286. ill. 13*s.* 6*d.* net. (*Recd.* 10/11/25.)

DELBRÜCK, MAX. Illustriertes Brauerei-Lexikon. 2nd edition. 2 vols. Edited by F. HAYDUCK. Berlin 1925. pp. iv + 534, ii + 438. ill. (*Reference.*) *M.* 54.

GAMBER, OSWALD. Die Herstellung des Cereisens und die Gewinnung der Chloride der seltenen Erden. Wien 1925. pp. viii + 126. *M.* 4. (*Recd.* 26/10/25.)

GARDNER, HENRY A. Physical and chemical examination of paints, varnishes, and colors. 2nd edition. Washington, D.C. 1925. pp. 376. ill. [Together with 22 circulars of the U.S. Standards Specification Board.] 45*s.* net. (*Recd.* 19/10/25.)

GRÜN, ADOLF. Analyse der Fette und Wachse sowie der Erzeugnisse der Fettindustrie. Vol. I. Berlin 1925. pp. xii + 576. ill. *M.* 36. (*Recd.* 22/10/25.)

IHERING, ALBRECHT VON. Maschinenkunde fur Chemiker. 3rd edition. pp. viii + 348. ill. *M.* 18. (*Recd.* 27/10/25.)

KLING, ANDRÉ. [Editor.] **Méthodes actuelles d'expertises employées au Laboratoire Municipal de Paris et documents sur les matières relatives a l'alimentation. 6 vols. Paris 1921—1923.** (*Recd.* 4/11/25.)

LANGE, OTTO. **Die Schwefelfarbstoffe. 2nd edition. (Chemische Technologie in Einzeldarstellungen.) Leipzig 1925. pp. xiv + 371. ill. *M.* 28.** (*Recd.* 26/10/25.)

OSTWALD, [WILHELM], and LUTHER [ROBERT THOMAS DIEDRICH]. **Hand- und Hilfsbuch zur Ausführung physikochemischer Messungen. 4th edition. Edited by CARL DRUCKER. Leipzig 1925. pp. xx + 814. *M.* 35.** (*Recd.* 27/10/25.)

PREUSS, E. **Die Fabrikation des Stärkezuckers, des Stärkezuckersirups und der Zuckerkulör mit besonderer Berücksichtigung des Betriebes. Leipzig 1925. pp. xvi + 320. ill. *M.* 16.20.** (*Recd.* 27/10/25.)

STAUB, H. **Insulin: Darstellung, Chemie, physiologische und therapeutische Anwendung. 2nd edition. Berlin 1925. pp. vi + 178. ill. *M.* 8.40.** (*Recd.* 3/11/25.)

III. *Pamphlets.*

MINES DEPARTMENT. ***Safety in Mines Research Board.*** **Paper No. 13. Stone dust as a preventive of coal dust explosions. Comparative tests. By G. S. RICE and RICHARD VERNON WHEELER. London 1925. pp. 15. ill.**

RAY, SIR PRAFULLA CHANDRA. **Acharyya Prafulla Chandra Ray and his many-sided activities. By an admiring pupil. Calcutta 1924. pp. vi + 79. ill.**

RAY, PRIYADA RANJAN. **Chemical research in India.** (From the *Calcutta Review*, 1925.)

SCIENTIFIC AND INDUSTRIAL RESEARCH, Department of. **Report of test by the Director of Fuel Research on Parker low temperature carbonisation plant installed at Barugh, Barnsley, at the works of Low Temperature Carbonisation, Ltd. Test carried out July 22nd to 24th, 1924. London 1924. pp. iv + 24. ill.**

—— **Report of test by the Director of Fuel Research on the carbonisation plant of Midland Coal Products, Ltd., Netherfield, Nottingham. Tests carried out January 20th to 23rd, 1925. London 1925. pp. vi + 23. ill.**

—— **River gauging: a report on methods and appliances suitable for use in Great Britain. By M. A. HOGAN. London 1925. pp. viii + 80. ill.**

—— **First Report of the Fabrics Co-ordinating Research Committee. London 1925. pp. iv + 70. ill.**

SCIENTIFIC AND INDUSTRIAL RESEARCH, Department of. Deterioration of structures of timber, metal, and concrete exposed to the action of sea-water. Fifth (interim) report of the Committee of the Institution of Civil Engineers. Edited by P. M. CROSTHWAITE and GILBERT R. REDGRAVE. London 1925. pp. viii + 66. ill.

—— *Building Research Board.* Bulletin No. 1. Jointless (magnesium oxychloride) floors. By P. W. BARNETT and B. BAKEWELL. London 1925. pp. iv + 26. ill.

—— *Food Investigation Board.* Special Report No. 21. The "gas" content and ventilation of refrigerated holds carrying apples. (Second Report on the Australian Expedition, 1923.) London 1925. pp. iv + 36. ill.

—— —— Special Report No. 22. Brown heart in Australian apple shipments. (Third Report on the Australian Expedition, 1923.) London 1925. pp. vi + 28. ill.

—— —— Special Report No. 23. Functional diseases of apples in cold storage. By FRANKLIN KIDD and CYRIL WEST. London 1925. pp. 15 + xiii plates.

—— —— Special Report No. 25. The handling and transport of fish. By EDGAR GRIFFITHS and CRAWFORD HERON. London 1925. pp. iv + 25. ill.

—— *Fuel Research Board.* Fuel for motor transport. Third memorandum. Power alcohol from tuber and root crops in Great Britain. London 1925. pp. vi + 37.

—— —— Physical and chemical survey of the national coal resources, No. 4. The Lancashire coalfields: the Ravine seam. Part i. London 1925. pp. vi + 34.

—— —— Technical Paper No. 11. The microstructure of a coal seam. By JAMES LOMAX. London 1925. pp. iv + 14 + 24 plates.

—— —— Technical Paper No. 12. The heating of rooms: a comparison of the costs of different methods on the basis of warmth comfort. By MARGARET WHITE FISHENDEN, assisted by ROBERT ERNEST WILLGRESS. London 1925. pp. iv + 48.

—— —— Technical Paper No. 13. The domestic grate: an experimental investigation of the relation between the design of a grate and the heat radiated into a room. By MARGARET WHITE FISHENDEN. London 1925. pp. iv + 25. ill.

—— —— Technical Paper No. 14. The enrichment of coal gas by the injection of oil into the retorts during carbonisation. London 1925. pp. vi + 61. ill.

SHARP, PAUL FRANCIS, and GORTNER, ROSS AIKEN. Viscosity as a measure of hydration capacity of wheat flour and its relation

to baking strength. (*Univ. Minnesota Agric. Exper. Station*, Technical Bulletin No. 19.) St. Paul 1923. pp. 119. ill.

SIMONSEN, JOHN LIONEL. The constituents of some Indian essential oils. Parts XIII—XV. (From the *Indian Forest Records*, 1924, **11**.)

SIMPKIN, NEVILLE, and DAWE, ALFRED. Boiler feed water (supply, softening and control in colliery practice). (*Lancs & Cheshire Coal Research Assoc.* Bulletin No. 16.) London 1925. pp. 45.

UNITED STATES. *Department of Agriculture.* Department Bulletin No. 1323. Citrus pectin. By HOMER D. POORE. Washington 1925. pp. 19.

—— *Department of Commerce.* Bureau of Standards. Technologic Paper No. 273. Performance tests of a liquid laundry soap used with textile materials. By F. R. MCGOWAN, F. W. SMITHER, and CHARLES W. SCHOFFSTALL. Washington 1924. pp. 26. ill.

WOODMAN, ROWLAND MARCUS. The physics of spray liquids. I. The properties of wetting and spreading. (From the *J. Pomology and Horticultural Science*, 1924, **4**.)

WORLEY, FREDERICK PALLISER. A new view of atomic structure and the relationship of the chemical elements. (From the *Rept. Austral. Assoc. Adv. Sci.*, 1923, **16**.) ill.

WOTCHAL, EUGEN PH. A contribution to the study of wood-sap. Moscow 1916. pp. 72. ill. [In Russian, with an English summary.]

CHNOLOGY DEPT.

JAN 20 1926
DETROIT.

PROCEEDINGS

OF THE

CHEMICAL SOCIETY.

Informal Lecture, Thursday, November 26th, 1925, at 6 p.m., Dr. N. V. SIDGWICK, M.A., F.R.S., Vice-President, in the Chair.

The CHAIRMAN mentioned that this was the first of the Informal Lectures to be given by the Society, and then called upon Professor R. Robinson, D.Sc., F.R.S., to deliver his Lecture entitled: "Recent Research on the Structural Relationships of some Plant Products."

At the conclusion of the Lecture a Vote of Thanks to the Lecturer was proposed by Professor T. M. Lowry, seconded by Dr. R. H. Pichard, and carried with acclamation, Professor Robinson making due acknowledgment.

Ordinary Scientific Meeting, Thursday, December 3rd, 1925, at 8 p.m., Dr. ARTHUR W. CROSSLEY, C.M.G., C.B.E., LL.D., F.R.S., President, in the Chair.

The PRESIDENT referred to the loss sustained by the Society, through death, of the following Fellows:

	Elected.	Died.
James Kerr Erskine	Dec. 5th, 1889.	April, 1925.
Robert Walter Oddy	May 15th, 1890.	Nov. 24th, 1925.
William Robert Lang	March 4th, 1897.	Nov. 20th, 1925.

Certificates were read for the first time in favour of:

Dattatraya Vishwanath Bal, Rothamsted Experimental Station, Harpenden.

Bernard Meredith Brown, B.Sc., F.I.C., Hill Close, Croham Manor Road, S. Croydon.

Frederick Leslie Clark, 170, Barnsley Road, Sheffield.

Reginald Clifford Fawcett, B.Sc., The Cottage, Pentre, Wrexham.

Ko Ko Gyi, Agricultural College, Mandalay.

Tom Heap, B.Sc., Birch Mount, Church Road, New Mills, Stockport.

Stanley Barker Johnson, c/o Colombo Gas & Water Co., Ltd., Colombo, Ceylon.

Leonard George Jupp, B.Sc., A.R.C.S., 6, Chesham Road, Kemp Town, Brighton.

Horace Alfred Mayes, B.Sc., The Cottage, Sewage Works, Vicarage Lane, East Ham, E. 6.

Henry Geoffrey Ordish, B.A., Chilcombe, Milton Road, Harpenden.
Arnold Piukus, 238, Amhurst Road, Stoke Newington, N. 16.
Clifford Burrough Purves, B.Sc., Edenbank, Cupar.
Suresh Chandra Ray, P.O. Alambazar, Ray Villa, Calcutta.
Edna Clark Smith, B.Sc., 9, Gilston Road, S.W. 10.
Sidney David Sutton, 2, Glasshouse Street, W. 1.
Raymond Taylor, M.A., B.Sc., St. Brelades, Woodside Road, Parkstone.
Richard Victor Thomas, B.A., 17, Pretoria Road, Cambridge.
Henry Wilkins, B.Sc., 13, Kinfauns Road, Goodmayes.
Reginald Frank Wright, A.R.C.S., Fairhazel, Avondale Road, Hove.

Messrs. E. Horton and W. B. Saville were elected Scrutators, and a ballot for the election of Fellows was held. The following were subsequently declared elected as Fellows:

Robert Leslie Andrew.
Louis Baissac.
William Francis Barker, Ph.D.
Ralph Basden.
Frank Bell.
Arthur Neville Copnall Bennett, B.Sc.
Harold Frederick Betts, B.Sc.
John Cecil Bird, B.Sc., A.I.C.
Lionel Christopher William Birkett, B.Sc.
James Boyd, F.I.C.
Frank Symonds Bradhurst.
Edward Britnell, B.Sc.
Reginald John Bromfield.
Francis Hereward Burstall, B.Sc.
Archer John William Butterfield.
John Hildred George Carlile, B.Sc., A.R.C.S.
Leslie James Chalk, B.Sc.
Rama Charan, B.Sc., B.Sc.Tech.
John William Corran, B.Sc., Ph.D., A.I.C.
John Harold Cottier.
Edward Mortimer Crowther, D.Sc., F.I.C.
Bertram Cuthbert.
Frank Edwin Dickinson.
Joseph Raymond Dolphin, B.Sc.
William Donovan, M.Sc.
John Stanley Dunn, M.A., Ph.D., A.I.C.
John Horsfall Dyde.
George Malcolm Dyson, B.A., B.Sc., Ph.D.
Alfred Eccles, B.Sc.
Edwin Francis Edwards.
John Moelwyn Edwards.
George Albert Elliott, M.Sc.
Eric Bertram Evans, B.Sc.
Elinor Katharine Ewbank, B.A.
Elizabeth Monica Openshaw Farrow, M.A.
Oliver Free, B.A.
William Marshall Freeman.
Eva Florence Gee.
James Walter Shanks Gemmell, B.Sc.
Francis Reginald Glover.
William Bouch O'Brien Goudielock.
Felix John Theodore Grigg, M.Sc., A.I.C.
George Vincent Hall, B.Sc.
John Hall, M.Sc., A.I.C.
William Rowan Hare.
Walter Healey.
Thomas Henderson, M.C., M.A., B.Sc.
Herbert Sim Hirst.
Syed Husain, M.Sc.
Toru Iwadare.
David Christopher Mendis Jayewardene.
Gilbert Jessop, M.Sc., Ph.D.
Charles Benjamin Johnson.
Walter Idris Jones, B.Sc., Ph.D.
Henry Wilfrid Keenan.
Brian Charles Lavers Kemp, B.A.
Charles King.
Frederick Karl Victor Koch, B.Sc., A.R.C.S.
Charles Dudley Langford, B.Sc., A.R.C.S.
Banarsi Das Laroia, B.A., B.Sc.
Henry Guinness de Laszlo, B.A., Ph.D.
Bertram Grey Leatherbarrow.
Sam Lenher, B.A.
John Joseph Lennon, M.Sc.

William Macartney.
Ivan Roy McHaffie, B.A., M.Sc.
Neil McLean, M.A., B.Sc.
Leslie George Manchester, B.Sc.
William Alfred Nottage Markwell.
William Francis Martin, F.I.C.
Charles Henry Lawrence Miller, B.Sc.
Edgar Calvin le Roy Miller, M.D.
Arthur Moore.
Alexander John Morrison.
Frank Richard Morrison.
John Blackburn Murgatroyd.
Chitsukhlal Hiralal Nanavati.
Henry Nicholson, M.Sc.
Anna Maria O'Meara.
Horace Winston Palmer, B.Sc.
Norman Frederick Parker, B.A., A.I.C.
Austin McDowell Patterson.
Ernest Phillis, B.Sc.
Jonathan Pollitt, B.A.
Charles Raymond Porter, M.Sc., A.I.C.
Evan Emrys Price, B.Sc.
Marjorie Ellen Pring, B.Sc.
Jnanendra Nath Rây, M.Sc.
Herbert Charles Roberts.
Phyllis Mary Sanderson.
Rose Rachel Sass, B.Sc.
Robert Saxon, B.Sc.
Rupert Boswood Scammell, B.Sc.
Albert Sciver, B.Sc., A.I.C.
George Baty Scott.
Upo Shin.
Albert Louis Auguste Sigot.
Dalip Singh, Ph.D.
Frederick Francis Percival Smith, B.A., B.Sc.
Robert Frederick Smith.
William Ernest Soper, B.Sc.
Herbert Kenneth Southern, M.Sc.
Eric Alfred Speight, B.Sc.
Frank Harland Swire.
Harold James Tattersall, B.Sc., Ph.D.
William Veale Thorpe, B.A.
William Milburn Towler, B.Sc.
David, Traill, B.Sc.
Elvera Annie Tricker.
Donald Morrison Turner.
Geoffrey Turner, B.Sc.
Norman Leopold Tyler.
Herbert Ward Vernon, B.Sc.
Frederick Henry Webb.
Ewart Harrod Williams, B.Sc., A.I.C.
Gwyn Williams, B.Sc.
Hugh Amphlett Williams.
Robert Harding Williams.
John Laurence Wiltshire, B.Sc.
John James Benjamin Wolfe.
Gordon Mitchell Wright, M.A., B.Sc.
Wilfred Fisher Wyatt, M.Sc.
John Frederick Zimmermann.

The following papers were read:

"On the Budde effect in bromine. Part I. The photoactive constituent in wet bromine." By B. Lewis and E. K. Rideal.

"On the Budde effect in bromine. Part II. The kinetics of the reaction and the light absorption of wet and dry bromine." By B. Lewis and E. K. Rideal.

"The influence of carbon rings on the velocity of reactions involving their side-chains. Part I. The hydrolysis of cyclic and open-chain malonic esters." By R. Gane and C. K. Ingold.

"The density of boric oxide glass and the suspected variation in the atomic weight of boron." By H. V. A. Briscoe, P. L. Robinson, and G. E. Stephenson.

Ordinary Scientific Meeting, Thursday, December 17th, 1925, at 8 p.m., Dr. ARTHUR W. CROSSLEY, C.M.G., C.B.E., LL.D., F.R.S., President, in the Chair.

The PRESIDENT referred to the loss sustained by the Society, through death, of the following Fellows:

	Elected.	*Died.*
George Frederick William Blackburn	May 15th, 1913.	Nov. 23rd.
Edmund Knecht	Dec. 1st, 1910.	Dec. 8th.
James Grant	Feb. 6th, 1890	Dec. 7th.

The PRESIDENT announced that:

1. A Special Lecture will be delivered by Professor J. Barcroft, F.R.S., entitled "Hæmoglobin" on Thursday, February 11th, 1926, at 8 p.m. The Lecture will be held in the Chemistry Theatre of the University College, Gower Street, W.C. 1, by the kind permission of the College Authorities.

2. British Chemical Abstracts "A," Pure Chemistry for 1926, printed on one side of the paper only, and gummed or ungummed, will be obtainable by Fellows at the price of £3 0*s.* 0*d.*, post free. Application should be made to the Assistant Secretary, Mr. S. E. Carr, as soon as possible.

The following were formally admitted Fellows of the Chemical Society: Thomas M. Sharp, Arthur Moor, Cecil J. May, J. F. Zimmermann, F. Bell, C. D. Langford,and J. M. Edwards.

Certificates were read for the first time in favour of:

Edwin Melhuish Bailey, Almond Hill, Pumpherston, Midcalder.
Carl Howard Collie, B.A., New College, Oxford.
William Eric Downey, Ph.D., Imperial College of Science and Technology, S. Kensington, S.W. 7.
Andor Fodor, Ph.D., Hebrew University, Jerusalem.
Herbert Harris, B.Sc., Ph.D., A.R.C.S., 1, Royal York Villas, Clifton, Bristol.
Ralph Harry Klein, A.I.C., 11, Park Place Villas, Maida Hill, W. 2.
Montague Alexander Phillips, A.I.C., 31, Cator Street, S.E. 15.
Devasikhamani Sunderavelu Pillai, 37, Hill Street, Stoke-on-Trent.
Charles Aylmore Ray, B.A., 47, Somerford Grove, Tottenham, N. 17.
Ivy Winifred Elizabeth Rogers, 8, St. Lawrence Road, W. 10.
Ronald Stanley Russell, B.A., 47, Redington Road, Hampstead, N.W. 3.
Robert John Schaffer, B.A., B.Sc., 3, Hambalt Road, S.W. 4.
Charles Richard Noël Strouts, B.A., B.Sc., A.I.C., Westminster Bank, Kew Gardens, Surrey.
Frank Sherwood Taylor, M.A., B.Sc., 21, Shortlands Road, Shortlands, Kent.
Claude Stanley Watson-Will, Musgrave Road, Indooroopilly, Brisbane.
Idris Williams, B.A., 19, Silver Street, Cambridge.

The meeting was then adjourned, and the Informal Meeting declared open.

The Council has made the following Grants from the Research Fund :

	£	s.	d.
Preparation and investigation of rare earth carbides. N. L. Anfilogoff	10	0	0
Preparation of phenanthrenes from stilbenes. J. N. Ashley ...	5	0	0
Investigation of certain binary and ternary systems. C. R. Bailey	5	0	0
Synthesis of genistein. W. Baker	15	0	0
Studies in the anthracene series (*contd.*). E. de B. Barnett ...	5	0	0
(*a*) Studies in aliphatic and cyclic sulphides			
(*b*) Reactivity of some quinoxaline bases. G. M. Bennett ...	5	0	0
Study of the mutual solubility relations of certain binary liquid systems. H. F. Betts	3	0	0
The dynamic isomerism of menthyl-cotarnine and of assymmetrical xanthydrols. B. C. Chatterjee	12	0	0
Thiocyano- and selenocyano-groups in the aromatic nucleus. F. Challenger	5	0	0
Preparation and study of certain polyhydroxy derivatives of diphenic acid. G. H. Christie	5	0	0
Synthesis of substituted tri- and tetra-methylene ring derivatives from compounds obtained by condensation of malonic ester with aldehydes. H. Clayton	5	0	0
Anthranyl ketones. J. W. Cook	5	0	0
Addition of bivalent carbon compounds to bodies of the diazomethane class. K. Cooper	5	0	0
Stability of Schiff's bases. P. K. Dutt	5	0	0
Conversion of asymmetric bromo compounds into the corresponding sulphonic acids. E. B. Evans	5	0	0
Influence of the benzoyl group on the mobility of the three-carbon tautomeric system. M. D. Farrow	10	0	0
Studies in the catalytic activity of charcoal. J. B. Firth ...	10	0	0
Solubility relationships of alums and pseudo alums. S. Glasstone	3	0	0
Study of alkylene thiosulphates and of alkylene disulphonic acids. J. Goodspeed	5	0	0
Quasi-aromatic structure (*contd.*). F. R. Goss	5	0	0
Properties of conjugated compounds. A. T. Healey	6	0	0
Periodic chemical reactions. E. S. Hedges	15	0	0
Substitution in the aromatic nucleus. W. J. Hickinbottom ...	4	0	0
Photochemical combination of hydrogen with other gases. H. S. Hirst	7	0	0
(*a*) Synthetical experiments in the anthocyanidin series ...			
(*b*) Synthesis of indole derivatives. H. R. Ing	10	0	0
Conditions of equilibrium between alkali and alkaline earth halides and the alcohols (*contd.*). W. J. Jones	8	0	0
The chemistry of the three-carbon system. L. G. Jupp ...	8	0	0
(*a*) Reaction with ammonia of various unsaturated cyano esters (*b*) Methylation and ethylation products of various unsaturated cyano amides. (Miss) W. Kilroy	5	0	0
Lactone formation from the $\alpha\alpha'$- $\beta\beta'$-dibromo adipic acids. C. D. Langford	6	0	0
Properties of conjugated compounds. B. D. Laroia	6	0	0
Substituted diphenyl compounds. R. J. W. Le Fèvre	5	0	0

	£	s.	d.
Condition of formation and stability of carbon rings. J. J. Lennon	8	0	0
Action of nitric acid on unsaturated hydrocarbons. (Miss) P. V. McKie	10	0	0
Synthesis of (*a*) Degradation product of brucine, and (*b*) Harmaline and some of its derivatives. R. H. F. Manske ...	10	0	0
The effect of bulky groups on the mobility of the 3-carbon system. C. J. May	5	0	0
Researches on thallium compounds (*contd.*). R. C. Menzies ...	8	0	0
Three carbon tautomerism. B. T. Narayanan	6	0	0
Kinetics of the induction period of the hydrogen-chlorine reaction with ultra-violet light. R. G. W. Norrish	10	0	0
Action of ozone on dry iodine. H. W. Palmer	5	0	0
Nitration of substituted phthalides. J. N. Rây	7	0	0
Reactions between 1 : 3-diketones and amino and amido bodies. E. Roberts	5	0	0
Investigation of certain sesquiterpenes. J. M. Robertson ...	5	0	0
Properties of unsaturated cyclic ketones. J. Ross	5	0	0
The direct introduction of substituents into a mono-substituted diphenyl. H. A. Scarborough	5	0	0
Preparation and properties of various types of halogenated naphthalene derivatives. J. B. Shoesmith	10	0	0
Researches on sulphuryl chloride and chlorination. O. Silberrad	5	0	0
Influence of substituents on the stability of certain spiro and associated ring systems. S. S. G. Sircar	6	0	0
The basic salts, salts of mixed acids, and complex salts of metals of the 3rd and 8th periodic groups. J. D. Main Smith ...	12	0	0
Nitration studies of tertiary aromatic amines. J. M. Smith ...	5	0	0
Condensation reactions with certain β-halogenated acids. M. G. Thomson	5	0	0
Introduction of the methylene-dioxy group and of similar groups into the aromatic nucleus. V. M. Trikojus	8	0	0
Conversion of substituted aromatic amines into quinolines. E. E. Turner	5	0	0
Effect of polar substituents on the Walden inversion among benzene derivatives. E. E. Turner	5	0	0
The chemistry of molybdenum. W. Wardlaw	5	0	0
Reaction of halogens with aliphatic acids, anhydrides, and allied substances. H. B. Watson	5	0	0
(*a*) Spatial structure of *cyclo*paraffins			
(*b*) Constitution of the mono-chloro- and mono-bromo-methyl succinic acids. W. A. Wightman	5	0	0
(*a*) The migratory aptitudes of methoxy-phenyl groups			
(*b*) Experiments upon phthalophenone derivatives, etc. E. W. Wignall	10	0	0
Structural mobility in dihydromuconic systems. R. F. Wright .	5	0	0
Total	£388	0	0

List of papers, or abstracts thereof, received between November 20th and December 17th, 1925. (This list does not include titles of papers which have been read at an Ordinary Scientific Meeting, or which have appeared in the Journal.)

"The mechanism of the formation of *o*- and *m*-hydroxybenzaldehydes from the nitration product of benzaldehyde." By H. H. HODGSON and H. G. BEARD.

"The constitution of the normal monosaccharides. Part III. Rhamnose." By E. L. HIRST and A. K. MACBETH.

"Resolution of *dl*-dicentrine." By R. D. HAWORTH, W. H. PERKIN, and J. RANKIN.

"Synthetical experiments in the *iso*quinoline group. Part VI. A synthesis of derivatives of paraberine." By R. CAMPBELL, R. D. HAWORTH, and W. H. PERKIN.

"The action of alkaline arsenites on some halogenated organic compounds." By I. E. BALABAN.

"The equivalent conductivity of solutions of sodium hydroxide and the mobility of the hydroxyl ion." By H. R. RAIKES, A. F. YORKE, and F. K. EWART.

"An investigation of the zirconium in Colorado pitchblende." By O. FREE.

"Some products from the resins of *Xanthorrhœa*, *Hastilis*, *X. Arborea*, and *X. Reflexa*." By H.H. FINLAYSON.

"The nitration of β-naphthoic acid and some new amino- and nitronaphthoic acids." By H. A. HARRISON and F. A. ROYLE.

"Preparation of *p*-bromophenylhydroxylamine by the emulsification process. A modification." By R. D. HAWORTH and A. LAPWORTH.

"Optical activity and the polarity of substituent groups. Part III. Menthyl acetophenone-*o*-carboxylate." By H. G. RULE and J. SMITH.

"The crystal structure of catechol." By W. A. CASPARI.

"The chlorination and bromination of 4-aminodiphenyl." By H. A. SCARBOROUGH and W. A. WATERS.

"Studies of dynamic isomerism. Part XXI. The velocity of mutarotation of glucose and of tetramethylglucose in aqueous alcohols." By E. M. RICHARDS and T. M. LOWRY.

"Studies of dynamic isomerism. Part XXII. The velocity of mutarotation of glucose and of tetra-acetylglucose in aqueous acetone." By G. G. JONES and T. M. LOWRY.

"Some unsymmetrically substituted dinitro and diamino derivatives in the stilbene and tolane series. Part I. The fission of hydrogen chloride from 3 : 4′-dinitrostilbene dichloride." By H. A. HARRISON and H. WOOD.

"The mercuration of aromatic substances. Part II. Orthonitrotoluene." By S. COFFEY.

"*N*-Alkylated amidines." By M. SEN and J. N. RAY.

"The equilibrium between ethyl alcohol and the alkali and alkaline earth salts. Part I." By D. G. R. BONNELL and W. J. JONES.

"The dissociation pressures of alcoholates. Part I." By D. G. R. BONNELL and W. J. JONES.

"Ethyl hydrogen sulphate. Part II." By M. A. HAMID, K. SINGH, and H. B. DUNNICLIFF.

"Heterogeneous equilibria between the sulphates and nitrates of sodium and potassium and their aqueous solutions. Part I. The ternary systems." By M. A. HAMID.

"Heterogeneous equilibria between the sulphates and nitrates of sodium and potassium and their aqueous solutions. Part II. The quaternary system H_2O–Na_2SO_4–$NaNO_3$–K_2SO_4–KNO_3." By M. A. HAMID.

"A new reaction of certain diazosulphonates derived from β-naphthol-1-sulphonic acid. Part I. The preparation of phthalazine, phthalazone, and phthalimidine derivatives from 4′-nitrobenzene-2-naphthol-1-diazosulphonate." By F. M. ROWE, E. LEVIN, A. C. BURNS, J. S. H. DAVIES, and W. TEPPER.

"Substituted dihydropentazines—a new series of cyclic nitrogen compounds." By F. D. CHATTAWAY and G. D. PARKES.

"Dvi-manganese." By J. G. F. DRUCE and F. H. LORING.

"Preparation, hydrolysis, and reduction of the fluoro-, chloro-, and bromo-benzyl bromides." By J. B. SHOESMITH and R. H. SLATER.

"Absorption spectra of condensed nuclear hydrocarbons." By N. S. CAPPER and J. K. MARSH.

"The melting points of the normal saturated dibasic acids." By D. A. FAIRWEATHER.

"Tautomerism in the thyroxin molecule." By C. S. HICKS.

"The structure of the normal monosaccharides. Part IV. Glucose." By E. L. HIRST.

"An investigation of the hydrated fluoride of zirconium and the preparation of a hydrofluozirconic acid." By E. B. R. PRIDEAUX and E. C. ROPER.

"3 : 4- and 2 : 5-Dimethoxyphenylhydrazine." By W. H. PERKIN and L. RUBENSTEIN.

"Condensations involving active methyl groups in heterocyclic bases." By J. E. HUMPHRIES.

"The system ferrous oxide–phosphoric acid–water and some of its oxidation products." By S. R. CARTER and N. H. HARTSHORNE.

"Absorption spectra and tautomerism. Part I. Keto-enol tautomerism." By R. A. MORTON and W. C. V. ROSNEY.

"Absorption spectra and tautomerism. Part II." By R. A. MORTON and E. ROGERS.

"Absorption spectra of mesityl oxide." By R. A. MORTON.

"The decomposition of substituted carbamyl chlorides by hydroxy-compounds. Part II. The influence of the constitution of the hydroxy-compound." By T. W. PRICE.

"Substitution in vicinal trisubstituted benzene derivatives. Part IV." By L. RUBENSTEIN.

"The complex salts of ββ′β″-triaminotriethylamine with nickel and palladium." By F. G. MANN and W. J. POPE.

"γγ′γ″-Triaminotripropylamine and its complex compounds with nickel." By F. G. MANN and W. J. POPE.

"Preparation and reduction of methyleneanthrone." By E. de B. BARNETT and M. A. MATTHEWS.

ADDITIONS TO THE LIBRARY.

I. *Donations.*

ABDERHALDEN, EMIL. [Editor.] Handbuch der biologischen Arbeitsmethoden. Abt. XI, Methoden zur Erforschung der Leistungen des Pflanzenorganismus. Teil 3, Heft iii. Berlin 1925. pp. 465—612. ill. *M.* 6. (*Recd.* 16/11/25.)
From the Publishers: Herren Urban & Schwarzenburg.

BOYLE, ROBERT. Paradoxa hydrostatica novis experimentis (maximam partem physicis ac facilibus) evicta. Oxonii 1669. pp. [lii] + 210 + [iv]. (*Reference.*) From Dr. O. Silberrad.

JOB, P. Les méthodes physiques appliquées a la chimie. Paris 1926. pp. vi + 252. ill. 30 *fr.* net. (*Recd.* 11/12/25.)
From the Publishers: MM. Gaston Doin et Cie.

JOURNAL OF THE CHEMICAL INDUSTRY. Vol. I, etc. Moscow 1924 +. [In Russian.] (*For circulation.*) From the Publishers.

LABARRE, F. Manuel du chimiste de laiterie : analyse du lait et de ses sous-produits. Paris [1925]. pp. 168. 20 *fr.* (*Recd.* 24/11/25.) From the Publishers : MM. Gauthier Villars et Cie.

PARTINGTON, JAMES RIDDICK. The alkali industry. 2nd edition. London 1925. pp. xii + 344. ill. 12*s.* 6*d.* net. (*Recd.* 10/12/25.) From the Author.

SOCIETY OF LEATHER TRADES' CHEMISTS. Journal. Vol. VIII, etc., Leeds 1924 +. (*For circulation.*) From Dr. M. Nierenstein.

TINKLER, CHARLES KENNETH, and MASTERS, HELEN. Applied chemistry : a practical handbook for students of household science and public health. Vol. II. Foods. London 1925. pp. xii + 276. ill. 15*s.* net. (*Recd.* 19/11/25.) From the Authors.

II. *By purchase.*

AMOS, PERCY A. Processes of flour manufacture. New edition. Revised by JAMES GRANT. London 1925. pp. xii + 312. ill. 9*s.* net. (*Recd.* 10/12/25.)

BARCROFT, JOSEPH. The respiratory function of the blood. Part I. Cambridge 1925. pp. xii + 208. ill. 12*s.* 6*d.* net. (*Recd.* 10/12/25.)

BENRATH, ALFRED. Physikalische Chemie. 2 vols. Dresden 1925. pp. viii + 107, x + 192. *M.* 11.50. (*Recd.* 6/11/25.)

BLAKE, ERNEST G. Enemies of timber : dry rot and the death-watch beetle . . . and the methods to be adopted for their extermination. London [1925]. pp. xviii + 206. ill. 12*s.* 6*d.* net. (*Recd.* 10/12/25.)

BOURCART, E. Insecticides, fungicides, and weed killers. 2nd English edition, revised and enlarged by THOMAS R. BURTON. London 1925. pp. xii + 431. ill. 15*s.* net. (*Recd.* 10/12/25.)

COX, HENRY EDWARD. The chemical analysis of foods : a practical treatise on the examination of foodstuffs and the detection of adulterants. London 1926. pp. viii + 324. ill. 18*s.* net. (*Recd.* 10/12/25.)

HATSCHEK, EMIL. An introduction to the physics and chemistry of colloids. 5th edition. London 1925. pp. xiv + 184. ill. 7*s.* 6*d.* net. (*Recd.* 10/12/25.)

—— Laboratory manual of elementary colloid chemistry. 2nd edition. London 1925. pp. 154. ill. 7*s.* 6*d.* net. (*Recd.* 10/12/25.)

HEATON, NOËL. Volatile solvents and thinners used in the paint and varnish industries. London 1925. pp. 158. 15*s.* net. (*Recd.* 10/12/25.)

HURST, GEORGE H. Lubricating oils, fats and greases: their origin, preparation, properties, uses and analysis. 4th edition, revised and enlarged by HERBERT BIRTWHISTLE STOCKS. London 1925. pp. xii + 410. ill. 12*s*. 6*d*. net. (*Recd*. 14/12/25.)

JEANS, JAMES HOPWOOD. The dynamical theory of gases. 4th edition. Cambridge 1925. pp. viii + 444. 30*s*. net. (*Recd*. 10/12/25.)

KÜRSCHNER, KARL. Zur Chemie der Ligninkörper. (Sammlung Vol. XXVIII.) Stuttgart 1925.

MCCLENDON, J. F., and MEDES, GRACE. Physical chemistry in biology and medicine. Philadelphia 1925. pp. 426. ill. 21*s*. net. (*Recd*. 10/12/25.)

MATHEWS, ALBERT PRESCOTT. Physiological chemistry. 4th edition. [New York] 1925. pp. xviii + 1234. ill. 30*s*. net. (*Recd*. 14/12/25.)

MILES, WALTER MASON. The chemistry of power plant. London 1925. pp. 144. ill. 6*s*. net. (*Recd*. 14/12/25.)

MONTANISTISCHEN HOCHSCHULE IN LOEBEN. Berg- und Hüttenmännisches Jahrbuch. Vol. 71, etc., Berlin 1923 +. (*Reference*.)

POUCHER, WILLIAM ARTHUR. Perfumes, cosmetics and soaps, with especial reference to synthetics. 2nd edition. Vol. I. London 1925. pp. x + 298. ill. 16*s*. net. (*Recd*. 10/12/25.)

SIEGBAHN, MANNE. The spectroscopy of X-rays. Translated with the author's additions by GEORGE A. LINDSAY. London 1925. pp. xii + 288. ill. 20*s*. net. (*Recd*. 14/12/25.)

STILES, WALTER. Photosynthesis: the assimilation of carbon by green plants. London 1925. pp. viii + 268. ill. 16*s*. net. (*Recd*. 14/12/25.)

TROTMAN, SAMUEL RUSSELL, and TROTMAN, EDWARD RUSSELL. The bleaching, dyeing, and chemical technology of textile fibres. London 1925. pp. xii + 610. ill. 30*s*. net. (*Recd*. 10/12/25.)

III. *Pamphlets*.

CROMPTON, HOLLAND. Nebulium? An address to the Bedford College Chemical Society, November 3rd, 1925. [London 1925.] pp. 15.

MENSCHUTKIN, BORIS N. Salt producers. (Note on history of Russian chemical nomenclature.) 1925. pp. 8. [In Russian.]

—— Two centuries of the Russian Academy of Science. 1925. pp. 16. ill. [In Russian.]

MINES DEPARTMENT. *Safety in Mines Research Board*. Paper No. 11. Electrical exploders for shot-firing in coal mines. (A report of a sub-committee of the Explosives in Mines Research Committee.) London 1925. pp. 31. ill.

MINES DEPARTMENT. Paper No. 12. The support of underground workings in the coalfields of Scotland. (A report of the Support of Workings in Mines Committee.) London 1925. pp. 24.

—— —— Paper No. 14. Coal dust explosions. The effect of release of pressure on their development. By H. P. GREENWALD and RICHARD VERNON WHEELER. London 1925. pp. 12. ill.

—— —— Paper No. 16. A new method of measuring pressures. By G. ALLSOP. London 1925. pp. 10. ill.

SCIENTIFIC AND INDUSTRIAL RESEARCH, Department of. *Food Investigation Board.* Special Report No. 8. By the Engineering Committee of the Board. The measurement of humidity in closed spaces. London 1925. pp. vi + 54. ill.

—— —— Special Report No. 24. Experiments on the leakage of carbon dioxide gas from "unventilated" holds of ships. By A. J. SMITH. London 1925. pp. iv + 25. ill.

—— *Fuel Research Board.* Physical and chemical survey of the national coal resources, No. 5. The Lancashire coalfield. The Smith seam. London 1925. pp. vi + 32. ill.

SHERWOOD, R. C. Protein survey of 1925 Minnesota wheat crop. State testing mill, Minneapolis. (Bulletin No. 45. State Department of Agriculture, Minnesota.) St. Paul, Minn. 1925. pp. 15. ill.

STANSFIELD, EDGAR, HOLLIES, ROBERT T., and CAMPBELL, WILLIAM P. Analyses of Alberta Coal. (Report No. 14. Scientific and Industrial Research Council of Alberta.) Edmonton 1925. pp. 63. ill.